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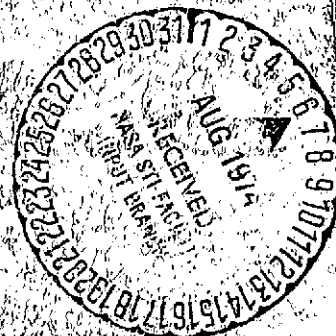
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ACOUSTIC RESULTS OF SUPERSONIC TIP SPEED FAN BLADE MODIFICATIONS

by

R.R. Jutras and S.B. Kazim

General Electric Company



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16. Abstract I. <u>ABSTRACT</u> A supersonic tip speed single stage fan was modified with the intent of reducing multiple pure tone (MPT) or "buzz saw" noise. There were three modifications to the blades from the original design. The modifications to the blade resulted in an increase in cascade throat area causing the shock to start at a lower corrected fan speed. The acoustic results without acoustically absorbing liners showed substantial reduction in multiple pure tone levels. However, an increase in the blade passing frequency noise at takeoff fan speed accompanied the MPT reduction. The net result however, was a reduction in the maximum 1000-foot (304.8 m) altitude level flyover PNL. For the case with acoustic treatment in the inlet outer wall, the takeoff noise increased relative to an acoustically treated baseline. This was largely due to the increased blade passing frequency noise which was not effectively reduced by the liner.			
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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I.	SUMMARY	1
II.	INTRODUCTION	4
III.	VEHICLE DESCRIPTION	5
IV.	TEST PROGRAM AND DATA ANALYSIS	6
V.	TECHNICAL DISCUSSION	7
	A. Data Presentation	7
	B. Aeroacoustic Design Considerations	8
	C. Untreated Nacelle Acoustic Data	8
	D. Treated Nacelle Acoustic Data	12
	E. Aerodynamic Performance Data	14
	F. Concluding Remarks	14
VI.	CONCLUSIONS	15
VII.	NOMENCLATURE	16
	FIGURES	17
VIII.	APPENDIX - ONE-THIRD OCTAVE DATA	95
IX.	REFERENCES	160
	DISTRIBUTION	161

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LIST OF ILLUSTRATIONS

<u>Figure</u>	<u>Page</u>
1. Mod II Untreated, Takeoff, 70°, 20 Hz Filter.	17
2. QEP Fan C, Cross Section.	18
3. Test Site and Stand.	19
4. QEP Modifications for Blade Tip Contour.	20
5. QEP Blade Modifications.	21
6. QEP Fan C, Flowpath Variations.	22
7. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Takeoff.	23
8. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 70°, Takeoff.	24
9. Fan C Scale Model, Mod II and Mod III.	25
10. Fan C Scale Model, Mod II and Mod VII.	26
11. Fan C Scale Model, Mod II and Mod VIII.	27
12. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 120°, Takeoff.	28
13. QEP Fan C Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Takeoff.	29
14. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 70°, Takeoff.	30
15. QEP Fan C Scale Model, 200-Foot Sideline SPL Vs. Frequency, 120°, Takeoff.	31
16. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 84% Fan Speed.	32
17. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 84% Fan Speed.	33
18. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 84% Fan Speed, 110°.	34

LIST OF ILLUSTRATIONS (Continued)

<u>Figure</u>		<u>Page</u>
19.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 72% Fan Speed.	35
20.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 72% Fan Speed.	36
21.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Approach.	37
22.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 50°, Approach.	38
23.	QEP Fan C Scale Model, 200-Foot Sideline Delta SPL Vs. Frequency, 70°, Approach.	39
24.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 110°, Approach.	40
25.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 130°, Approach.	41
26.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Approach.	42
27.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 70°, Approach.	43
28.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 130°, Approach.	44
29.	QEP Fan C Scale Model, Scaled Delta _{Max} . Forward-Perceived Noise Level Vs. Percent Thrust.	45
30.	QEP Fan C Scale Model, Scaled Maximum Forward-Perceived Noise Level Vs. Percent Thrust.	46
31.	QEP Fan C Scale Model, Scaled Maximum-Perceived Noise Level Vs. Percent Thrust.	47
32.	QEP Fan C Scale Model, Maximum Aft-Perceived Noise Level Vs. Percent Thrust.	48
33.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	49

LIST OF ILLUSTRATIONS (Continued)

<u>Figure</u>		<u>Page</u>
34.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	50
35.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	51
36.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	52
37.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	53
38.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	54
39.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	55
40.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	56
41.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Takeoff.	57
42.	Fan C Scale Model, Mod II and Mod III.	58
43.	Fan C Scale Model, Mod II and Mod VII.	59
44.	Fan C Scale Model, Mod II and Mod VIII.	60
45.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 70°, Takeoff.	61
46.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 120°, Takeoff.	62
47.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Takeoff.	63
48.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 70°, Takeoff.	64
49.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 120°, Takeoff.	65
50.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 84% Fan Speed.	66

LIST OF ILLUSTRATIONS (Continued)

<u>Figure</u>		<u>Page</u>
51.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 84% Fan Speed.	67
52.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 84% Fan Speed, 70°.	68
53.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 72% Fan Speed.	69
54.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 72% Fan Speed.	70
55.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Approach.	71
56.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 50°, Approach.	72
57.	QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 130°, Approach.	73
58.	QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Approach.	74
59.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 50°, Approach.	75
60.	QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 130°, Approach.	76
61.	QEP Fan C Scale Model, Scaled Delta _{Max} . Forward-Perceived Noise Level Vs. Percent Thrust.	77
62.	QEP Fan C Scale Model, Scaled Max. Forward-Perceived Noise Level Vs. Percent Thrust.	78
63.	QEP Fan C Scale Model, Scaled Delta _{Max} . Aft-Perceived Noise Level Vs. Percent Thrust.	79
64.	QEP Fan C Scale Model, Scaled Maximum Aft-Perceived Noise Level Vs. Percent Thrust.	80
65.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	81
66.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	82

LIST OF ILLUSTRATIONS (Concluded)

<u>Figure</u>		<u>Page</u>
67.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	83
68.	QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.	84
69.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	85
70.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	86
71.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	87
72.	QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.	88
73.	QEP Fan C Scale Model, Mod II and Mod III.	89
74.	QEP Fan C Scale Model, Mod II and Mod VII.	90
75.	QEP Fan C Scale Model, Mod II and Mod VIII.	91
76.	QEP Fan C Scale Model Performance.	92
77.	QEP Fan C Scale Model Performance.	93
78.	QEP Fan C Scale Model Performance.	94

LIST OF TABLES

<u>Table</u>		<u>Page</u>
I.	Scale Model - Scaled, Untreated 200-foot (60.96-m) Sideline, SPL's for Takeoff at 70°.	2
II.	Scale Model - Scaled, Treated 200-foot (60.96-m) Sideline, SPL's for Takeoff at 70°.	2
III.	Level Flyovers - Scaled, Maximum Forward PNL.	3
A-I.	Fully Treated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	96
A-II.	Fully Treated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	97
A-III.	Fully Treated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	98
A-IV.	Fully Treated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	99
A-V.	Fully Treated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	100
A-VI.	Fully Treated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	101
A-VII.	Fully Treated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	102
A-VIII.	Fully Treated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	103
A-IX.	Fully Treated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	104
A-X.	Fully Treated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	105
A-XI.	Fully Treated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc.	106
A-XII.	Fully Treated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	107

LIST OF TABLES - Continued

<u>Table</u>		<u>Page</u>
A-XIII.	Fully Treated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	108
A-XIV.	Fully Treated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	109
A-XV.	Fully Treated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	110
A-XVI.	Fully Treated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	111
A-XVII.	Fully Treated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	112
A-XVIII.	Fully Treated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	113
A-XIX.	Fully Treated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	114
A-XX.	Fully Treated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	115
A-XXI.	Fully Treated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	116
A-XXII.	Fully Treated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	117
A-XXIII.	Fully Treated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	118
A-XXIV.	Fully Treated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	119
A-XXV.	Fully Treated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	120

LIST OF TABLES - Continued

<u>Table</u>		<u>Page</u>
A-XXVI.	Fully Treated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	121
A-XXVII.	Fully Treated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	122
A-XXVIII.	Fully Treated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	123
A-XXIX.	Fully Treated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	124
A-XXX.	Fully Treated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	125
A-XXXI.	Fully Treated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	126
A-XXXII.	Fully Treated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	127
A-XXXIII.	Untreated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	128
A-XXXIV.	Untreated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	129
A-XXXV.	Untreated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	130
A-XXXVI.	Untreated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	131
A-XXXVII.	Untreated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	132
A-XXXVIII.	Untreated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	133

LIST OF TABLES - Continued

<u>Table</u>		<u>Page</u>
A-XXXIX.	Untreated Mod II Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	134
A-XL.	Untreated Mod II Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	135
A-XLI.	Untreated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	136
A-XLII.	Untreated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	137
A-XLIII.	Untreated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	138
A-XLIV.	Untreated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	139
A-XLV.	Untreated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	140
A-XLVI.	Untreated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	141
A-XLVII.	Untreated Mod III Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	142
A-XLVIII.	Untreated Mod III Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	143
A-XLIX.	Untreated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	144
A-L.	Untreated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	145
A-LI.	Untreated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	146
A-LII.	Untreated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	147

LIST OF TABLES - Concluded

<u>Table</u>		<u>Page</u>
A-LIII.	Untreated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	148
A-LIV.	Untreated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	149
A-LV.	Untreated Mod VII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Takeoff.	150
A-LVI.	Untreated Mod VII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	151
A-LVII.	Untreated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, Approach.	152
A-LVIII.	Untreated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Approach.	153
A-LIX.	Untreated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 72% Fan Speed.	154
A-LX.	Untreated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 72% Fan Speed.	155
A-LXI.	Untreated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 100' Arc, 84% Fan Speed.	156
A-LXII.	Untreated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, 84% Fan Speed.	157
A-LXIII.	Untreated Mod VIII Blades, Scale Model Data, Nominal Nozzle, 200' Arc, Takeoff.	158
A-LXIV.	Untreated Mod VIII Blades, Scale Model - Scaled Data, Nominal Nozzle, 200' Sideline, Takeoff.	159

I. SUMMARY

During the NASA/GE Quiet Engine Program, a supersonic tip speed fan, designated Fan "C", was constructed in a 36-inch (91.44 cm) diameter size (of linear scale of a full-size Fan "C"). As part of the Fan "C" test program, several blade modifications were made to determine if aerodynamic design changes could be affected which would reduce supersonic tip speed noise. The fan had 26 rotor blades and 60 outlet guide vanes (OGV). The basic fan was designed for a corrected tip speed of 1550 ft/sec (472.44 m/sec) at a bypass pressure ratio of 1.6.

The fan was tested with three blade modifications in addition to the basic design. Each modification was tested with and without acoustic treatment. Tables I and II below summarize the 1/3-octave sound pressure levels (SPL's) at the 100-foot (30.48 m) arc for the dominant multiple pure tones (MPT's), blade passing frequency (BPF), and second harmonic in the untreated and treated configurations. The acoustic results without acoustic treatment show a substantial reduction in multiple pure tone levels. However, an increase in blade passing frequency and second harmonic noise at take-off fan speed is also evident. The treated configurations (Table II) also show a decrease in the MPT's while the BPF and second harmonic increased.

Table III summarizes the front maximum level flyover PNL's for the treated and untreated configurations at approach and takeoff. The differences in PNL's are small relative to "Mod II" primarily due to the increase in BPF and the second harmonic. The treated "Mod VIII" configuration, however, contained 3.5 inches (8.89 cm) (19.4%) less acoustic treatment than the other configurations. This might account for some of the difference in noise for that modification.

T A B L E I

SCALE MODEL - SCALED

UNTREATED 200-FOOT (60.96-m) SIDELINE

SPL's FOR TAKEOFF AT 70°

(1/3-OCTAVE)

<u>MOD</u>	<u>Center Frequencies</u>				
	<u>500 cps</u>	<u>630 cps</u>	<u>1250 cps</u>	<u>2000 cps (BPF)</u>	<u>4000 cps (2nd Har.)</u>
II	110.5	106	102.5	98.5	92
III	98.5	94.8	89.5	103	91.5
VII	100.5	93	93.5	104	93.5
VIII	92	100.5	94	105	95.5

T A B L E II

SCALE MODEL - SCALED

TREATED 200-FOOT (60.96-m) SIDELINE

SPL's FOR TAKEOFF AT 70°

(1/3-OCTAVE)

<u>MOD</u>	<u>Center Frequencies</u>				
	<u>500 cps</u>	<u>630 cps</u>	<u>1250 cps</u>	<u>2000 cps</u>	<u>4000 cps</u>
II	94	87	91.5	92	89
III	85.8	82	80.5	98.6	90.5
VII	87	82	81.5	100.5	90.5
VIII	85.5	85.7	86	99.5	92

T A B L E I I I
 LEVEL FLYOVERS - SCALED
 MAXIMUM FORWARD PNL

(With Predicted Core Jet)

	<u>APPROACH (370', 112.776 m)</u>		<u>TAKEOFF (1000', 304.8 m)</u>	
<u>MOD</u>	<u>UNTREATED</u>	<u>TREATED</u>	<u>UNTREATED</u>	<u>TREATED</u>
II	99.4	91.8	107.5	97.8
III	98.9	93.2	103.8	99.2
VII	97.6	90.6	103.7	99.2
VIII	101.3	97	104.7	99.6

II. INTRODUCTION

The major objective of this program was to obtain a high tip speed blade design which would provide good performance and reduce the multiple pure tones associated with supersonic tip speeds.

It generally is accepted that fan or compressor noise can be categorized as:

- Blade passing frequency and harmonics
- Broadband
- Multiple pure tones

The latter are unique characteristics of rotor blades operating at supersonic tip relative mach numbers. A spectrum controlled by such tones is shown in Figure 1. This particular case is a result obtained on the original blade contour discussed in this report. The MPT's are, in fact, higher than the blade passing frequency (BPF) and its harmonics.

It is this type of noise, MPT's, which were the principal target in dictating the design modifications investigated in this study. The view taken of the generating mechanism of MPT's was that they are a result of the non-uniformity of the bow shock pattern which develops on the outer portion of a supersonic tip speed rotor blade. The pattern is made up of the individual shocks from each blade which are nonuniform in amplitude as well as nonuniformly spaced around the rotor. Resolution of this pattern into sinusoidal wave components results in the tones at integral multiples of one-per-rev as shown in Figure 1.

There is, at present, some controversy as to whether nonuniform spacing and/or amplitude are the most significant parameters in determining MPT noise signature. Furthermore, there are two principle methods by which shock pattern nonuniformities can be introduced: first, blade-to-blade geometric differences such as blade-to-blade spacing, individual blade stagger and camber, and blade radial dimensional variations; and second, circumferential nonuniform inflow conditions such as turbulence scale and amplitude.

However, one past test result which gave an indication of a method of noise reduction was that, as fan speed was increased beyond the take-off point, MPT levels appear to decrease (1). This speed range is generally associated with the swallowing of the shock which extends across neighboring blade passages. With this in mind, a change in the blade geometry was suggested which would put the shock in the swallowed position at takeoff and, thus, result in lower noise at this key noise measuring condition.

Although the design changes were expected to reduce take-off MPT noise, it was uncertain what the effect would be on blade passing frequency noise at takeoff, broadband, BPF noise at approach, and aerodynamic performance particularly at cruise (100% fan speed).

III. VEHICLE DESCRIPTION

This scale model fan was designated as Fan "C" in the Quiet Engine Program and was approximately a half-scale (52.7%) of the full-size fan. A cross-sectional sketch of the fan vehicle is shown in Figure 2. The fan has 26 rotor blades and 60 outlet guide vanes with an axial spacing between blade rows of two rotor tip chords. The basic fan was designed to produce a pressure ratio of 1.6 at a corrected tip speed of 1550 ft/sec (472.44 m/sec).

For some of the testing, acoustic treatment was placed on the fan duct walls. Figure 2 shows the location of acoustic treatment. The treatment material consists of 1/2-inch (1.3 cm) open-celled polyurethane foam (Scottfelt) backed by a solid plate and covered with a perforated face sheet. The face sheet has a porosity of 22-1/2%. Scottfelt, in general, is not a flight-worthy material and tends to exhibit noise suppression characteristics which exceed flight qualified materials. However, since all four tests were conducted with the same type of suppression material, the results are comparable.

As shown in Figure 2, "Mod VIII" had 3.5 inches (8.89 cm) less inlet treatment than the other MOD's. The data of "Mod VIII" with treatment, therefore, should be interpreted with this in mind.

For the untreated configurations, the treatment was neutralized by covering it with an adhesive-backed foil tape.

Aerodynamic data were taken with arc rakes ahead of and behind the fan package. These rakes and other aerodynamic probes were removable so they would not interfere with acoustic testing.

IV. TEST PROGRAM AND DATA ANALYSIS

The test program was conducted at General Electric's Peebles test site. The vehicle was located on the scale model fan component test stand as shown in Figure 3. The fan was driven by a front drive shaft powered through a gearbox by a General Electric LM1500 gas turbine engine. The gearbox and the LM1500 are contained within acoustically absorbing housings to prevent any contamination of the measured noise.

Acoustic data were taken by microphones placed on a 100-foot (30.48 m) arc centered at the fan inlet centerline at a height of 15 feet (4.572 m). The microphones were placed at 10-degree intervals from 20 degrees from the inlet axis around to 160 degrees from the inlet axis. The field between the microphones and the vehicle is covered with asphalt.

Acoustic testing was restricted to steady winds of 5 mph (8.03 km/hr) and gusts of no more than 3 mph (4.82 Km/hr) above the maximum steady wind from any direction. In addition, data were not taken when the field was wet or covered with snow, the relative humidity was less than 30% or in excess of 90%, or temperatures less than 20° F (-6.6° C). Also, all instrumentation protruding into the flowpath was removed prior to acoustic testing.

Acoustic data were recorded on a 28-channel Sagamo recorder with appropriate amplifiers for simultaneously recording 26 channels of acoustic data on FM with flat response through 20 KHz at a tape speed of 60 in/sec (152.4 cm/sec).

Data were taken over a range of speeds from 50% to 100% of the design speed in most cases. For each data point a repeat point was also taken. The repeat point helps to establish the scatter which is an integral part of all testing that relies on the average of a time-unsteady signal.

All four blade designs were tested in the treated and untreated configuration. The untreated configuration was obtained by taping the treated areas with a metal-impregnated tape which has demonstrated "hard" acoustic properties.

The acoustic data were analyzed in two ways. Most of the analysis was in 1/3-octave bands. These were obtained using a filter set and a 32-second averaging time. All data were corrected to a standard day of 59° F (15° C) and 70% relative humidity. The other method of analysis was through narrow-band filtering in 20-Hz bandwidths. For these analyses a UA-6A Federal Scientific Ubiquitous spectrum analyzer and a high resolution digital averager were used with a 12.8-second averaging time. This method of analysis provides a more definitive look at the spectrum than does 1/3-octave analysis, particularly when pure tone content is under investigation.

Ample aerodynamic data were acquired to determine the flow, pressure ratio, and efficiency of the fan on each operating line tested.

Together, the acoustic and aerodynamic data establish the performance tradeoffs for a given noise decrease.

V. TECHNICAL DISCUSSION

A. DATA PRESENTATION

1. Noise Scaling

The data presented have been scaled to reflect a full-scale fan design except where noted. The scale factor was .527 based on the full-scale fan which is 68.4 inches (173.736 cm) in diameter. The effect of adjusting the data to full-scale is to lower the frequency spectrum, since for a given tip speed a larger fan turns at a lower rotational speed than a smaller fan. For the case being considered, the scaling requires a downward shift of three 1/3-octave bands or one octave. In addition, adjustment for scale raises the level of noise by 10 times the logarithm of the ratio of the weight flow into the full-scale and the weight flow into the scale model.

By employing the scaling process, a more realistic evaluation of the extrapolation of the noise data to far distances from the fan can be obtained. This is true because of the difference in attenuation of various frequency noises in air. With the spectral components of noise in their proper bands, this attenuation is applied in a more realistic manner.

2. Core Jet Noise

The test vehicle used here, of course, does not contain the core jet. In many instances, this noise has a "dampening effect" on the overall engine noise reduction brought about by a fan noise reduction, since the jet noise may make a measureable contribution to the PNL. For this reason, some of the data presented in this report contain an addition for the core jet noise of a full-scale engine.

The jet noise levels were predicted from a correlation of jet noise data based on the weight flow, area, and velocity of the jet⁽²⁾. For this case these parameters were:

Weight flow - 143 lbm/sec (64.92 kg/sec)
Area - 5.9 ft² (.5483 m²)
Velocity - 856 ft/sec (260.9088 m/sec)

for the take-off fan speed, and:

Weight flow - 85 lbm/sec (38.59 kg/sec)
Area - 5.9 ft² (.5483 m²)
Velocity - 406 ft/sec (123.7488 m/sec)

for the fan approach fan speed.

3. Flight Velocity Effects

There are two direct effects of aircraft flight velocity which alter the noise spectra. First, the velocity results in Doppler shifting of the spectrum. In the cases being considered here, a flight velocity of 275 ft/sec (83.82 m/sec) ($M = .25$) was used. Where applicable Doppler shifting was included for level flyovers of the fan and core jet noise. The Doppler shift is made according to value of the Doppler factor - defined as $1/(1 + M)$ where M is the component of flight Mach number in the direction from the airplane to the microphone. If when this factor is multiplied by the 1/3-octave center frequencies, the result is a frequency in a neighboring band, a shift is made. Thus, if the factor exceeds 1.12 or is less than .89, a 1/3-octave band shift is made - to a higher frequency when the factor is 1.12 (source moving toward the observer), and to a lower frequency when the factor is .89 (source moving away from the observer).

A second effect acts to reduce the jet noise. This is due to a reduction in the relative velocity between the jet and the surrounding air (ambient air). The test data, of course, are taken statically; thus, a correction is required. This correction is computed by using the jet noise predictions recommended in the SAE's Air 876 "Jet Noise Prediction." The static and flight spectra are predicted for the fan jet as suggested by Air 876.

The parameters used for the fan were:

Weight flow - 668 lbm/sec (303.272 kg/sec)
Area - 10.7 ft² (.9944 m²)
Velocity - 886 ft/sec (270.0528 m/sec)

at take-off fan speed and:

Weight flow - 415 lbm/sec (188.41 kg/sec)
Area - 10.7 ft² (.9944 m²)
Velocity - 530 ft/sec (161.544 m/sec)

at approach fan speed. The differences between the predicted spectra for static and flight conditions are then determined and subtracted from the test data to obtain a "corrected" to flight spectrum.

In addition the frequency range over which the relative velocity correction is applied is important. That is, the relative velocity correction can only be applied over the frequency range in which jet noise is dominant. The determination of this point is largely done by examining the test spectra and designating the frequency by noting the dip in noise level which generally denotes the jet region (usually below 400 Hz) and the fan dominant region (usually above 400 Hz). The resulting spectra are then smoothed between the two regions of the spectra which are dominated by fan and jet noise.

Together the alterations made to the basic data cited above provide a means for evaluation of the test results under more meaningful conditions than would be provided by the static scale model fan data alone.

B. AEROACOUSTIC DESIGN CONSIDERATIONS

In each case tested, the basic intent was to alter the shock structure so as to reduce the multiple pure tone (MPT) noise. Figure 4 shows an overlay of the four airfoils tested. These sections are all at a radius of 16.86 inches (42.82 cm).

The airfoil labeled "Mod II" was designed by "conventional" practices. That is, the design point (100% corrected fan speed) performance was a key criterion. Since performance of high speed blading is highly dependent on the bow shock position, the airfoil shape and cascade geometry are tailored to put the shock in a "swallowed" position which results in a minimum of shock losses. One of the acoustic characteristics of such a blade is a drop-off in noise level as thrust is increased past the take-off thrust (usually above 100% of take-off thrust, see Figure 30 "Mod II" data). With this in mind, it was reasoned that, if the design shock position was obtained at takeoff, the take-off noise would be lower. The "Mod III" blade represents this design. From the performance point of view, this design change was expected to decrease design point efficiency.

The next blade shape selected was actually contrived from the "Mod III" by closing the blade (i.e., restaggering the blade so as to improve the incidence/blade angle match). It was hypothesized that this would help to increase the design point performance without affecting the noise output. One of the side effects of this change was that at a given corrected speed the flow and pressure ratio were lower than they were for "Mods II and III." This requires some correction to the acoustic data to put the absolute noise level data on a comparable basis. This was done by making several comparisons at constant thrust.

The last blade selected for testing, designated "Mod VIII," was an attempt to bring about an increase in design point efficiency while maintaining the acoustic characteristics of the "Mod III" blade design. Figure 5 shows the "Mod II, VII, and VIII" blades. The "Mod VIII" blade was thickened at the tip in order to change the aerodynamic characteristics by weakening the secondary shock in the cascade. Also, in order to maintain the same general performance characteristics, it was necessary to decrease the tip slope.

Figure 6 shows the two flowpaths for "Mod II" and "Mod VIII." The flow-per-unit-area was slightly higher for "Mod VIII" (40.26 lb/ft^2 , 196.52 kg/sq m) than "Mod II" at speeds below the design speed. Again, this was "corrected" in looking at some acoustic results by comparing the data on an equal thrust basis.

C. UNTREATED NACELLE ACOUSTIC DATA

Each of the fans was run without acoustic treatment. This section contains the acoustic data for a full-scale fan tested statically and for

take-off and approach conditions in level flight. In order to keep a constant baseline each set of data is first presented relative to "Mod II." Then "Mod II" and "Mod VIII" are presented in absolute terms.

Figures 7-15 contain static data scaled to full-scale at take-off (90%) fan speed. The PNL difference between "Mod II" and the other blades, Figure 7, on a 200-foot (60.96-m) sideline shows "Mod III" blades with a 2.5 PNdB reduction from 50 through 90 degrees. However, the most significant changes can be seen in the 70-degree spectra (Figures 8 through 11). The modified blades all exhibit a significant drop in the 250 to 800 Hz range and an increase in the blade passing frequency at 2000 Hz. The "Mod VIII" blade also shows an increase in higher frequency noise. Figures 9-11 are narrowband comparisons of each blade to "Mod II." The lower frequency reduction is due to decrease MPT content. Increases in the blade passing frequency (BPF) and second harmonic are evident in each case.

For this unsuppressed case, the 120-degree spectra (Figure 12) also exhibit a low frequency noise decrease. This, however, is not reduction in rear-radiated noise but reduction in MPT's which radiate around from the front.

As a point of reference, Figures 13 through 15 show the absolute noise levels from "Mod II" and "Mod VIII." The 70-degree spectra, Figure 14, clearly show that the spectrum has changed from MPT dominant for "Mod II" to BPF dominant for "Mod VIII."

At 84% speed, Figures 16 through 18, the modified blades continue to show lower PNL. It should be noted also that the "Mod VIII" blade shows a rear noise reduction. Examination of the 110-degree spectra, Figure 18, shows the PNL reduction to be due to a decrease in multiple pure tones and to a reduction in BPF.

As speed is decreased further to 72%, Figures 19 and 20, the picture changes, and the modified blades are now slightly increasing noise. The 72% speed is the speed at which the rotor tip speed is just sonic. At approach power (57.5% speed), the trend toward increased noise is also evident with the modified blades. Figure 21 shows "Mod VIII's" noise to have increased relative to "Mod II" - about 4 PNdB at 50 degrees. Spectral comparisons, Figures 22 and 23, show the increase to be wide spread for "Mod VIII," while "Mods III and VII" show some decreases.

At rear angles, Figures 24 and 25, the "Mod VIII" increase also appears. On an absolute basis, Figures 26-28 show "Mod VIII" and "Mod II." At 70 degrees "Mod VIII's" increase is largely above the BPF, particularly at frequencies above the second harmonic (3150 Hz band).

As was noted in Section V-B, the blade modifications made to affect the shock pattern, and thus the MPT generation, resulted in changes in flow and pressure ratio at a given speed. In an attempt to smooth out these differences, Figures 29-32 contain 200-foot (60.96-m) sideline PNL data versus percent thrust. In general, the comparisons result in the same conclusions as seen in comparisons at constant corrected fan speed. Figure 29 shows "Mod VIII" decreasing take-off noise by one PNdB and increasing approach noise by one PNdB at the front maximum. Figures 13 for take-off and 26 for approach speed show approximately the same result.

The absolute level of "Mods II and VIII" at the front maximum is shown in Figure 30. The characteristic drop in level at high speed is clearly seen. For "Mod VIII" this drop starts above 90% of take-off thrust; while, for "Mod II," the drop does not start until above 100% thrust. This decrease in the drop-off thrust level was one of the desired test results.

Figure 31 contains delta PNL data at the rear maximum on a 200-foot (60.96-m) sideline versus thrust. At low thrust none of the blades shows a noise reduction. At higher thrusts only "Mod VIII" shows no increase in level. On an absolute basis, Figure 32 shows a monotonic increase with thrust for "Mods II and VIII."

Figures 33-40 contain projections of the static noise at takeoff and approach to flight conditions at altitudes of 1000 and 370 feet (304.8 and 112.776 m) respectively. The flight Mach number was 0.25. Core jet noise has been predicted and added to the fan noise to provide a more realistic flight projection (see Section IV).

The take-off data, Figures 33-36, show a slightly greater noise reduction on a PNL basis than was indicated at 200 feet (60.96 m) (Figures 7-15). Tone correcting the data, Figure 34, however, reduces the reduction due to the modifications, largely because of the increase BPF levels. Figures 35 and 36 contain absolute level data on "Mods II and VIII." The PNL reduction at the maximum angle is 3 PNdB, but the PNL_T reduction is only 1.1 PNdB. On an EPNL basis, this leaves only a 0.4 EPNdB reduction.

At approach thrust, Figures 37-40, the adverse effect of the modifications seen at 200 feet (60.96 m) has been reduced. This is largely due to the increased distance which decreases the importance of the high frequency noise increase as seen in Figure 27. Tone correcting the data, Figure 38, has only a small effect; however, the overall result is an increase of 0.8 EPNdB between "Mods II and VIII" (Figures 39 and 40).

D. TREATED NACELLE ACOUSTIC DATA

A description of the treated nacelle is contained in Section III. Figures 41-49 contain take-off data for the modified blades. The 200-foot (60.96-m) sideline PNL shows an increase for all three blades at 70 degrees with "Mod VIII" 2.6 PNdB greater than "Mod II" as shown in Figures 42-44. In general, the treatment decreases the MPT activity of all the blades. For "Mod III" the MPT's decrease still further, but the BPF and second harmonic have increased. "Mod III" also shows a decrease in background level at high frequencies. "Mod VIII" also shows decreased MPT levels (Figure 44), but the higher frequency background noise is higher in level than "Mod II" as are the BPF and second harmonic.

The relative 1/3-octave spectral levels (Figures 45 and 46, at 70 and 120 degrees, respectively) show the effect of the MPT decrease and BPF and second harmonic increases. A decrease of 12.5 dB is obtained at 400 Hz, while an increase of about 7.5 dB occurs at the BPF for each modified blade at 80 degrees. At 120 degrees the "Mod III" blade shows the smallest change relative to "Mod II."

Absolute level data for "Mod VIII" and "Mod II" are shown in Figures 47-49. The BPF level at 70 degrees is 99 dB, while at 120 degrees the level is 93.5 dB. This differential, and the fact that the vehicle has a large aft suppressor, indicates that the rear noise tone increases are due to inlet-radiated noise reaching the rear quadrant.

In the treated configuration, "Mod VIII" appears to be louder than "Mod II." Some of the differences quoted would be reduced, however, if the inlets had equivalent acoustic treatment (see Figure 2). Equivalent inlet treatments might, therefore, reduce the front quadrant differences between "Mod II" and "Mod VIII" and possibly eliminate the aft quadrant differences at takeoff (Figure 47). The difference in inlet noise might be 1.0 to 2.0 PNdB if a linear relationship is assumed between suppression and treatment length.

At 84% speed, Figures 50 and 51, the modified blades show a slight decrease in front end noise except for "Mod VIII," where the front maximum angle increased by about 4 PNdB relative to "Mod II." At 84% speed, the rotor tip speed is still supersonic, and the BPF has increased with the reduction of MPT's. This point is illustrated in Figure 52, where the BPF level shows an increase of 12 dB for "Mod VIII" relative to "Mod II."

As speed is decreased further to 72%, Figures 53 and 54, all of the modified blades are showing noise increases relative to "Mod II" at all angles. At 72% speed, the rotor tip speed is just sonic. At approach power (57.5% speed) the trend toward increased noise is also evident with the modified blades. Figure 55 shows "Mod VIII's" noise to have increased about 6 PNdB at 50 degrees relative to "Mod II" and about 5 PNdB at 130 degrees. Figures 56 and 57 show spectral comparisons for the front and rear maximum angles. The increase for "Mod VIII" is wide spread, while "Mods III and VII" show some decrease in noise throughout the frequency range. At 130 degrees the most significant increase is at the second harmonic - 8 dB - with lesser increases at the BPF and frequencies above the second harmonic.

On an absolute basis, Figures 58-60 show the PNL distribution and frequency spectra for the front and rear maximum for "Mods II and VIII." At the front maximum angle, "Mod VIII" shows an increase of 5.5 PNdB and about 4.5 PNdB for the rear maximum.

Figures 61-64 show the 200-foot (60.96-m) sideline maximum PNL variations with percent thrust for the fully treated modifications. In general, the comparison results in the same conclusion as with the data compared at constant corrected fan speed. Figure 61 shows "Mod VIII" increasing about 2 PNdB at take-off and about 4 PNdB at approach thrust. For takeoff, Figure 47 shows approximately the same result. At approach, Figure 58 shows "Mod VIII" to have increased by 5.5 PNdB, which is slightly higher than shown on Figure 62. Figure 61 shows that, at a lower thrust, the delta PNL increases to about 4.0 PNdB relative to "Mod II."

A comparison of the absolute levels for the front maximum is shown in Figure 62. The slopes of the curves indicate that both "Mod II and VIII" increase in noise at high thrust levels, but at a slower rate than at thrust levels below 85%. "Mod II" levels off at about take-off thrust, while "Mod VIII" decreases slightly. Although the characteristic drop in level at high thrust is not as evident for the treated configuration, the absolute levels are lower.

Figure 63 contains the delta PNL data for the rear maximum on a 200-foot (60.96-m) sideline versus percent of take-off thrust. Throughout the thrust range, only "Mod VII" shows a noise reduction relative to "Mod II." On an absolute basis, Figure 64 shows a monotonic increase with thrust for "Mods II and VIII."

Figures 65-72 contain projections of the static noise at takeoff and approach to flight conditions for the treated inlet. Altitudes of 1000 feet (304.8 m) and 370 feet (112.776 m) were used for takeoff and approach, respectively. The same procedure was used to represent level flyovers for the treated inlet as for the untreated inlet. That is, a core jet noise was added to the fan for more realistic flight projection. The flight Mach number was 0.25.

At takeoff, Figures 65-68, the delta PNL increase for "Mod VIII" relative to "Mod II" is approximately the same as that presented for the 200-foot (60.96-m) sideline (Figures 45-49). Tone correcting the data, Figure 66, however, shows an increase due to the modifications, primarily because of the increase in BPF levels. Figures 67 and 68 show absolute level data for "Mod II and VIII." The PNL increase at the maximum angle is about 2 PNdB, but the PNLT increase is about 2.8 PNdB. On an EPNL basis this represents an increase of 1.8 EPNdB, most of which is attributed to BPF.

At approach thrust, Figures 69-72, the PNL distribution is very similar to that of the 200-foot (60.96-m) sideline (Figure 58). Tone correcting the treated inlet data at approach, Figure 70, has the effect of increasing the noise levels about 1 to 2 PNdB throughout the arc, which results in an increase of 3.6 EPNdB between "Mods II and VIII" (Figures 71 and 72).

E. AERODYNAMIC PERFORMANCE DATA

For each of the blades, the performance map was determined by using a set of fixed nozzles with various areas. The performance maps are presented in Figures 73 and 74. The "Mod III," "Mod VII," and "Mod VIII" maps are superimposed on the basic configuration, "Mod II." The solid lines represent the "Mod II" performance while the symbols are for the modified blades. Figure 73 shows that "Mod III" blades pass higher flow up to 90% speed; at higher speeds, "Mod III" passes less flow. The smallest nozzle area used on "Mod III" produced an unstalled pressure ratio of 1.775. The nominal area, 396 in² (2554.2 cm²), exhaust nozzle produced the design pressure ratio of 1.6 at 100% corrected fan speed.

Up to 90% speed, Figure 75, "Mod VIII" passes less flow than "Mod II;" at higher speeds, "Mod VIII" passes more flow. The smallest nozzle used on "Mod VIII" produced an unstalled pressure ratio of 1.7 at 100% corrected fan speed. "Mod VIII" had a smaller annulus area and, therefore, passed less flow at the design speed. However, the specific flow (lb_m/ft^2) (kg/m^2) of the two fans is comparable.

Figures 76, 77, and 78 show the efficiency trend with corrected fan speed for each nozzle. With the nominal nozzle, the "Mod III" blade is about 2% better than "Mod II" at low speed and equivalent at takeoff, but drops appreciably at the design point. "Mod VII" has high efficiency at low speed but drops off rapidly at high speeds. At low speeds, "Mod VIII" efficiency is approximately equal to "Mod II" up to take-off speed. At design speed, "Mod VIII" is about 3% higher in efficiency than "Mod II."

It must be noted that the relatively short span of these blades results in a somewhat lower absolute efficiency level than a lower-radius-ratio fan. This is due to the high Mach number over the hub wall which locally reduces efficiency. However, on a comparative basis, these results are significant.

F. CONCLUDING REMARKS

Thus an airfoil design has been developed which results in a much lower level of MPT's without any sacrifice in fan cruise performance. In aerodynamic terms, a smaller precompression (less flow deceleration) is done in the forward part of the cascade than in a conventional blade in order to prevent the shock structure from escaping forward of the cascade. Also, the aft portion of the airfoils is shaped so as to provide a smooth deceleration and prevent the development of a strong passage shock wave. The effect acoustically is reduced MPT's, but an increase in the blade passing frequency. Although, the modified blade has a higher BPF, the total acoustic energy generated in the MPT's and BPF is less for the modified blades than the conventionally designed blade. The increased BPF level, however, will require that care be taken to place the BPF in a less annoying frequency band and/or tuned acoustic liners specifically for this increased noise.

VI. CONCLUSIONS

1. A change in the basic blade airfoil design criteria can act to reduce multiple pure tone (buzz saw) noise in supersonic tip speed fans.
2. Future design changes aimed at reducing multiple pure tones must acknowledge the possibility that the blade passing frequency will increase.

VII. NOMENCLATURE

BPF	Blade Passing Frequency
dB	Decibel
EPNL	Effective Perceived Noise Level
F_n	Engine Net Corrected Thrust
Hz	Hertz (Cycles per Second)
M_o	Aircraft Mach Number
Max	Maximum
Min	Minimum
MOD	Modification
$N/\sqrt{\theta}$	Fan Rotational Speed, Corrected to Standard Day
OGV	Outlet Guide Vane
P_{T23}/P_{T2}	Ratio of Fan Bypass Exit Total Pressure to Fan Inlet Total Pressure
PNdB	Perceived Noise Decibel
PNL	Perceived Noise Level; a Calculated Annoyance Weighted Sound Level
PNLT	Tone Corrected Perceived Noise Level
PWL	Sound Power Level, Re 10^{-13} Watts
QEP	Quiet Engine Program
SLS	Sea Level Static
SPL	Sound Pressure Level, Re $0.0002 \text{ Dynes/cm}^2$
$W\sqrt{\theta}/\delta$	Bypass Airflow, Corrected to Standard Day, lbm/sec (kg/sec)
η	Efficiency

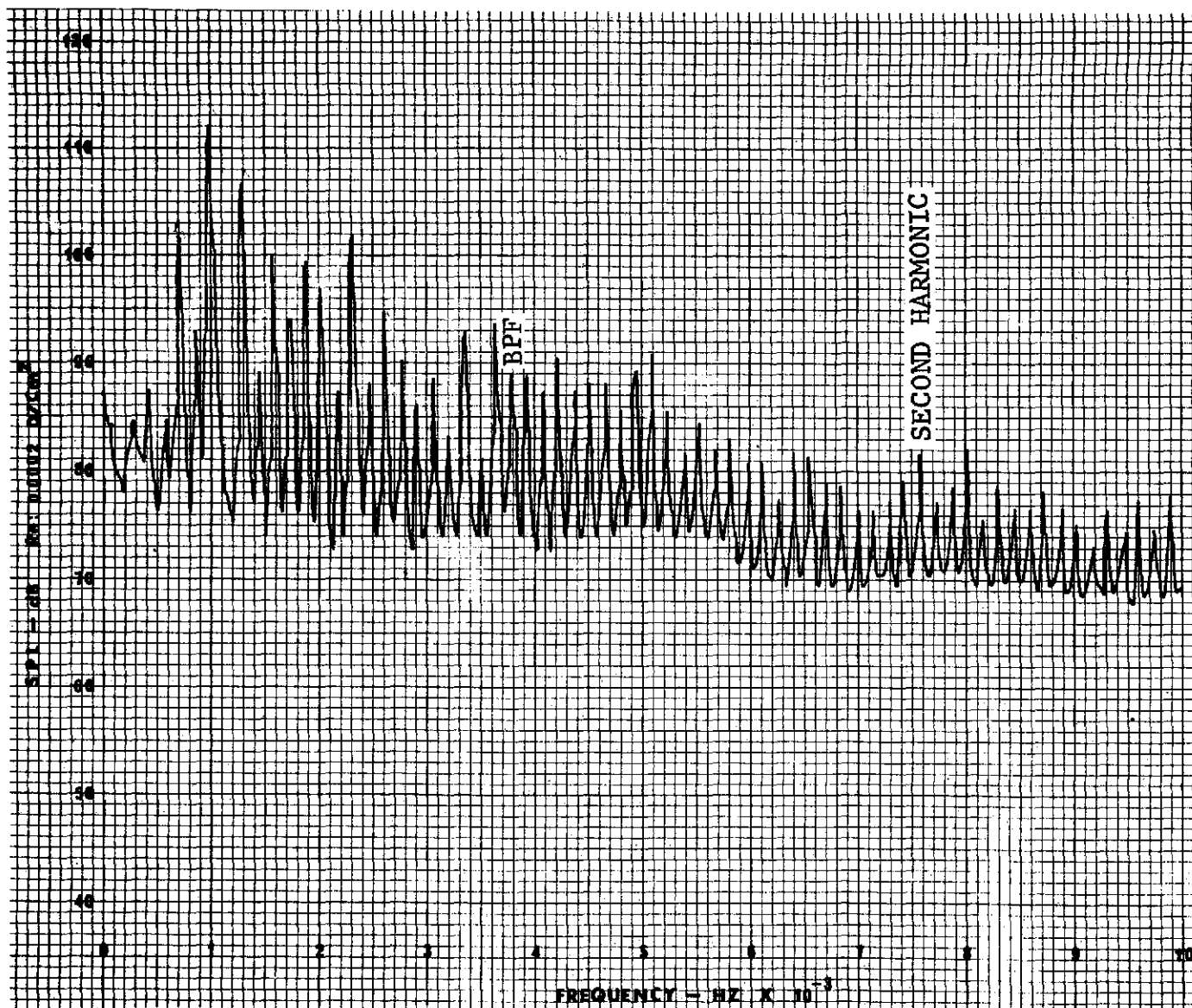


Figure 1. Mod II Untreated, Takeoff, 70°, 20 Hz Filter.

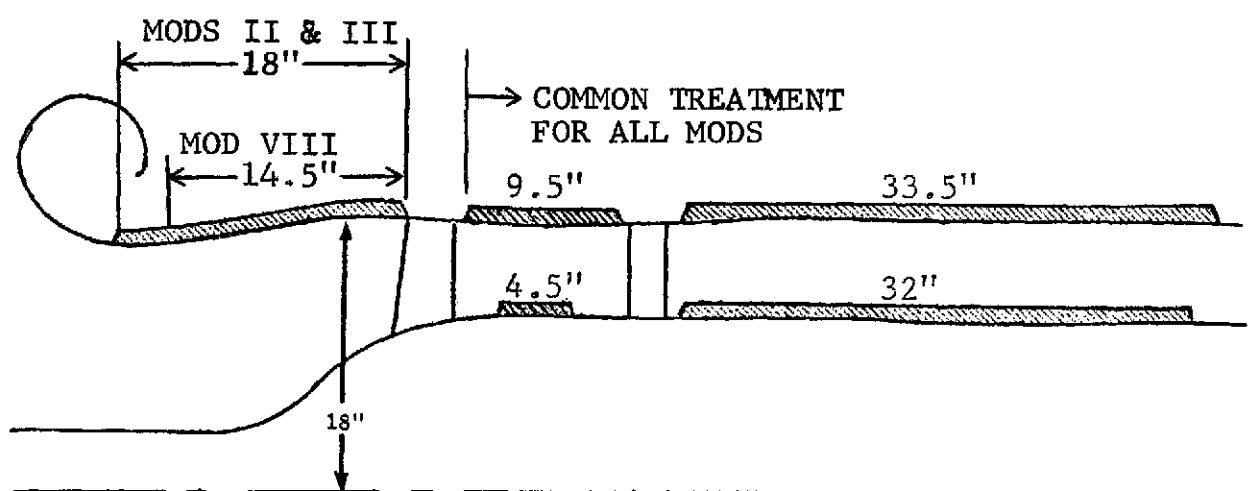


Figure 2. QEP Fan C, Cross Section.

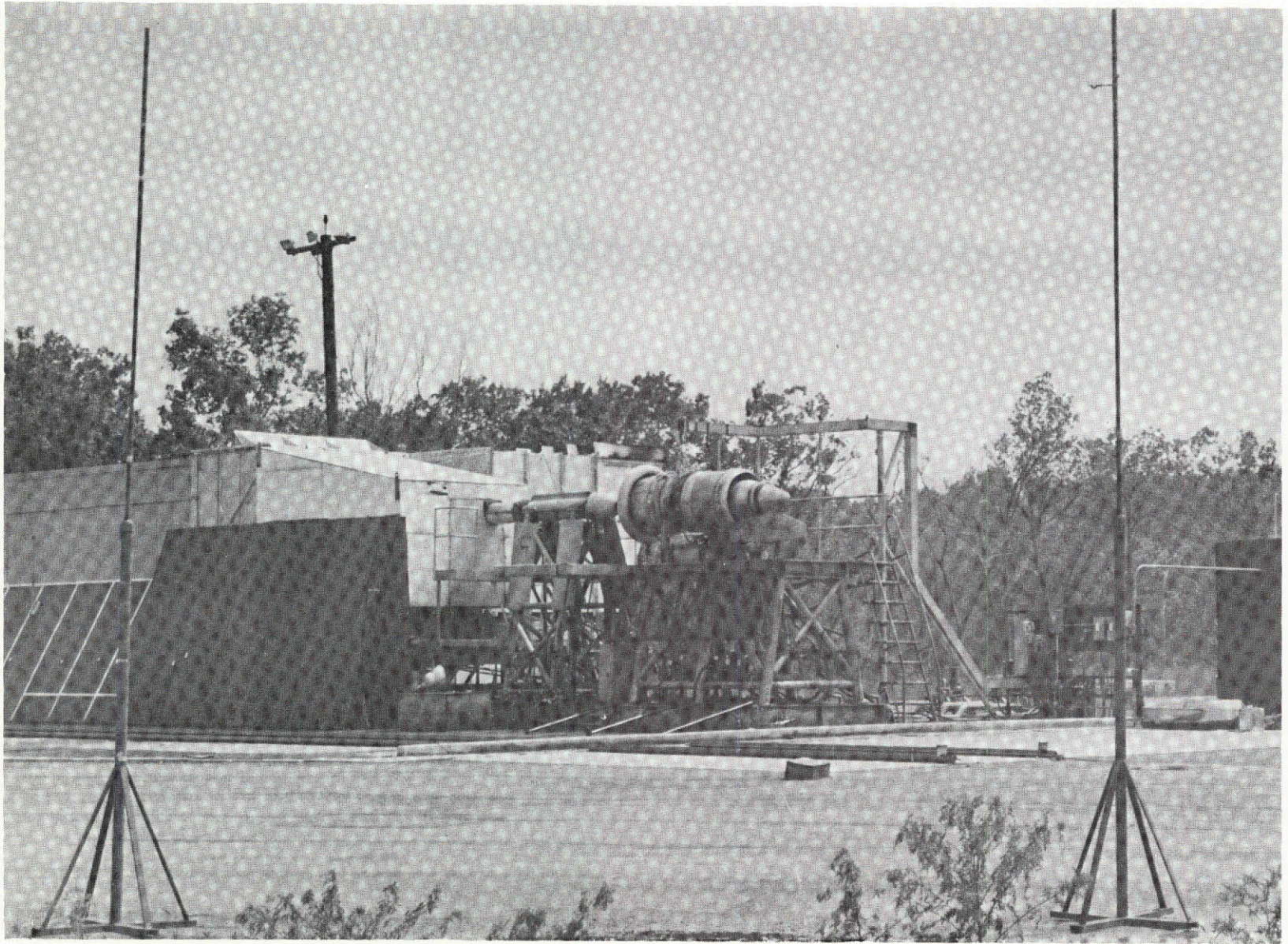


Figure 3. Test Site and Stand.

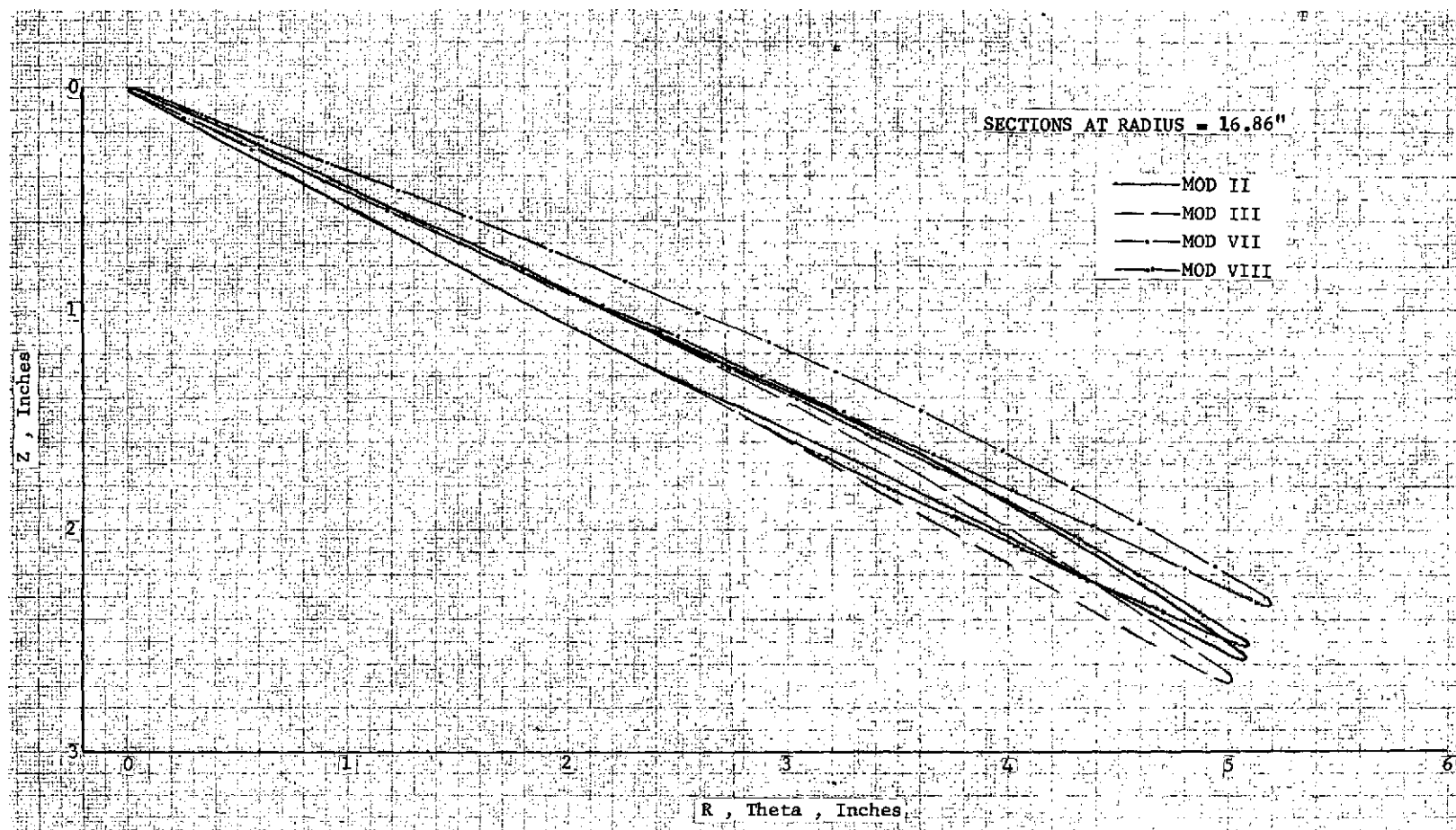


Figure 4. QEP Modifications for Blade Tip Contour.

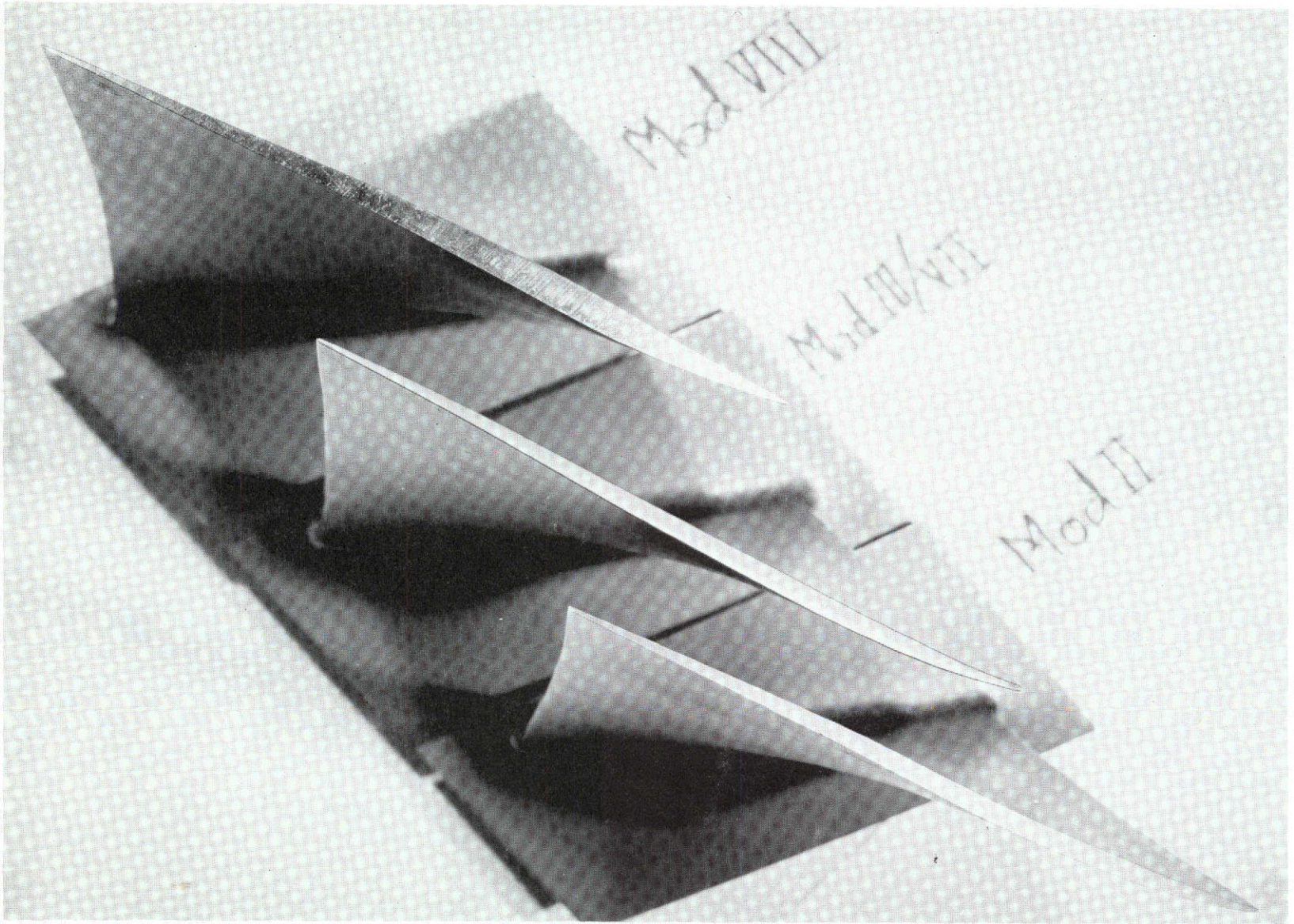


Figure 5. QEP Blade Modifications.

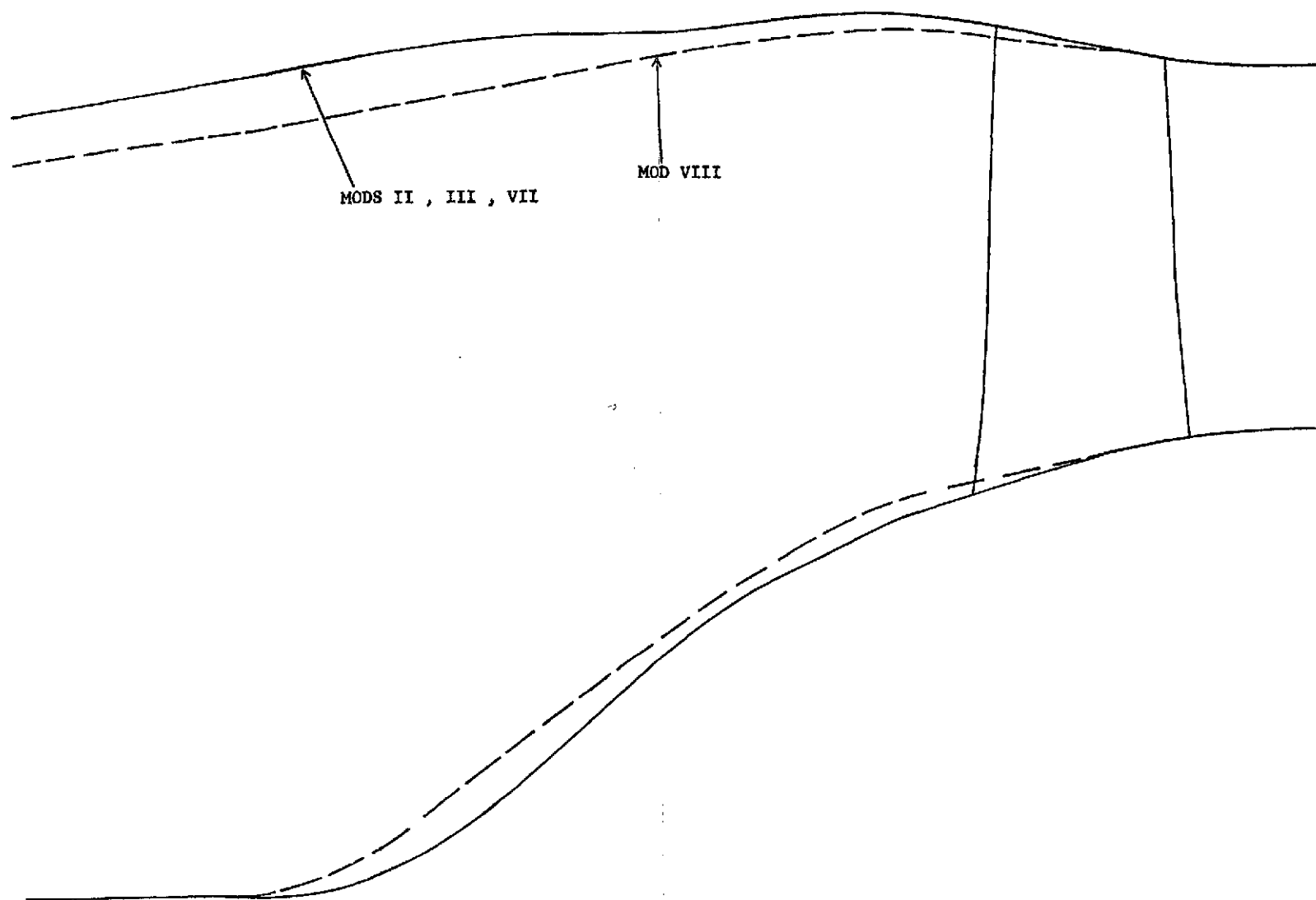


Figure 6. QEP Fan C, Flowpath Variations.

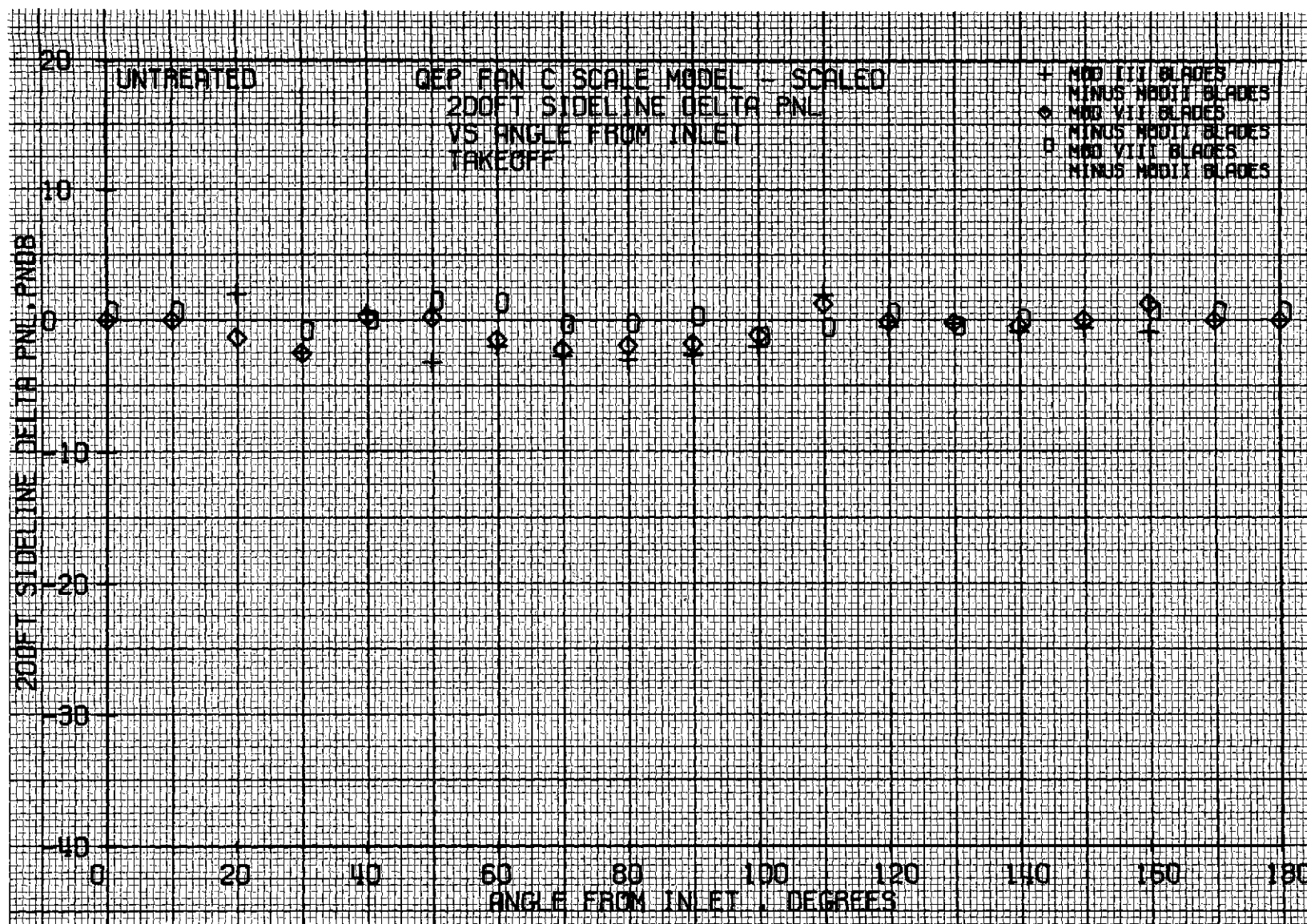


Figure 7. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Takeoff.

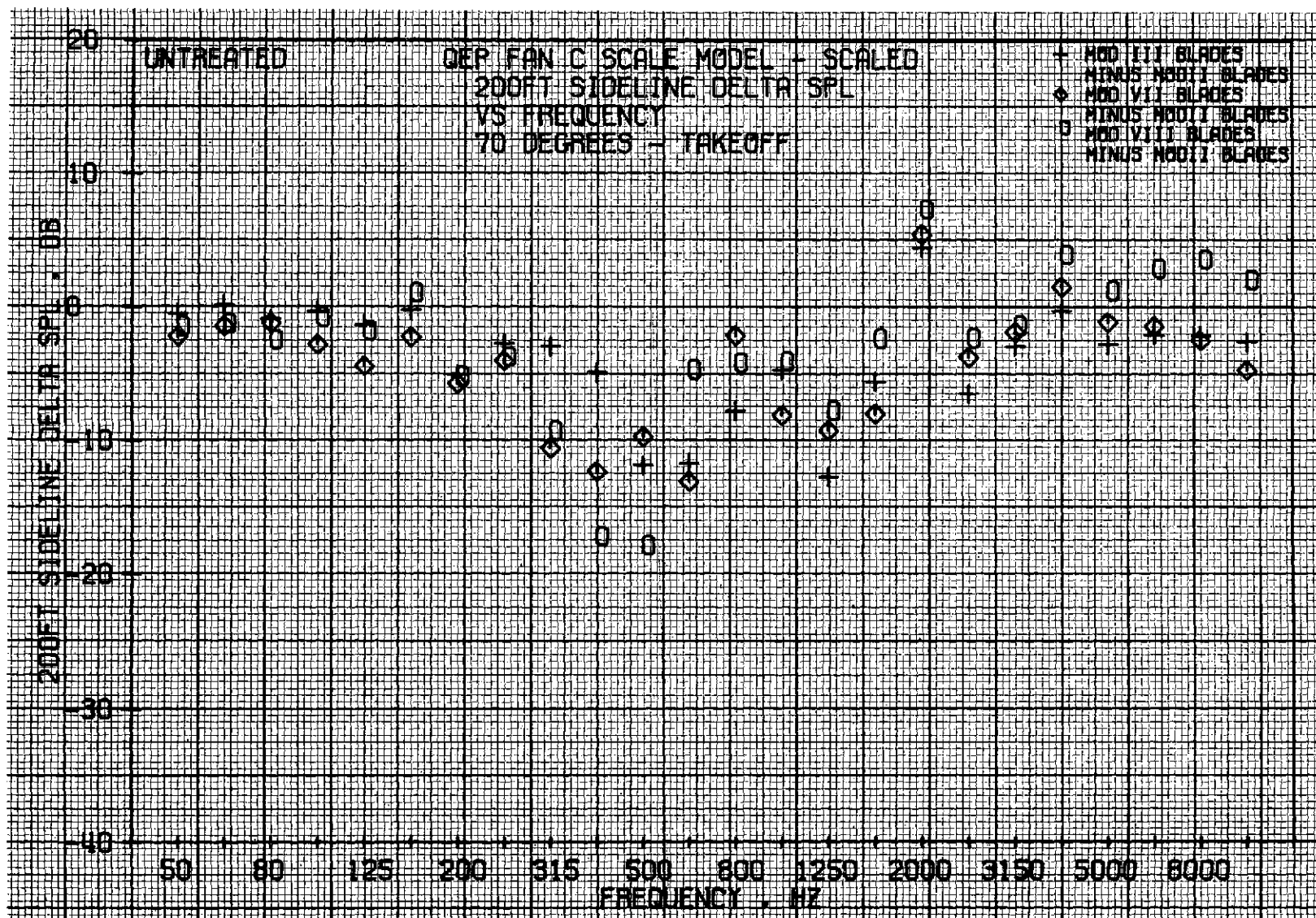


Figure 8. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 70°, Takeoff.

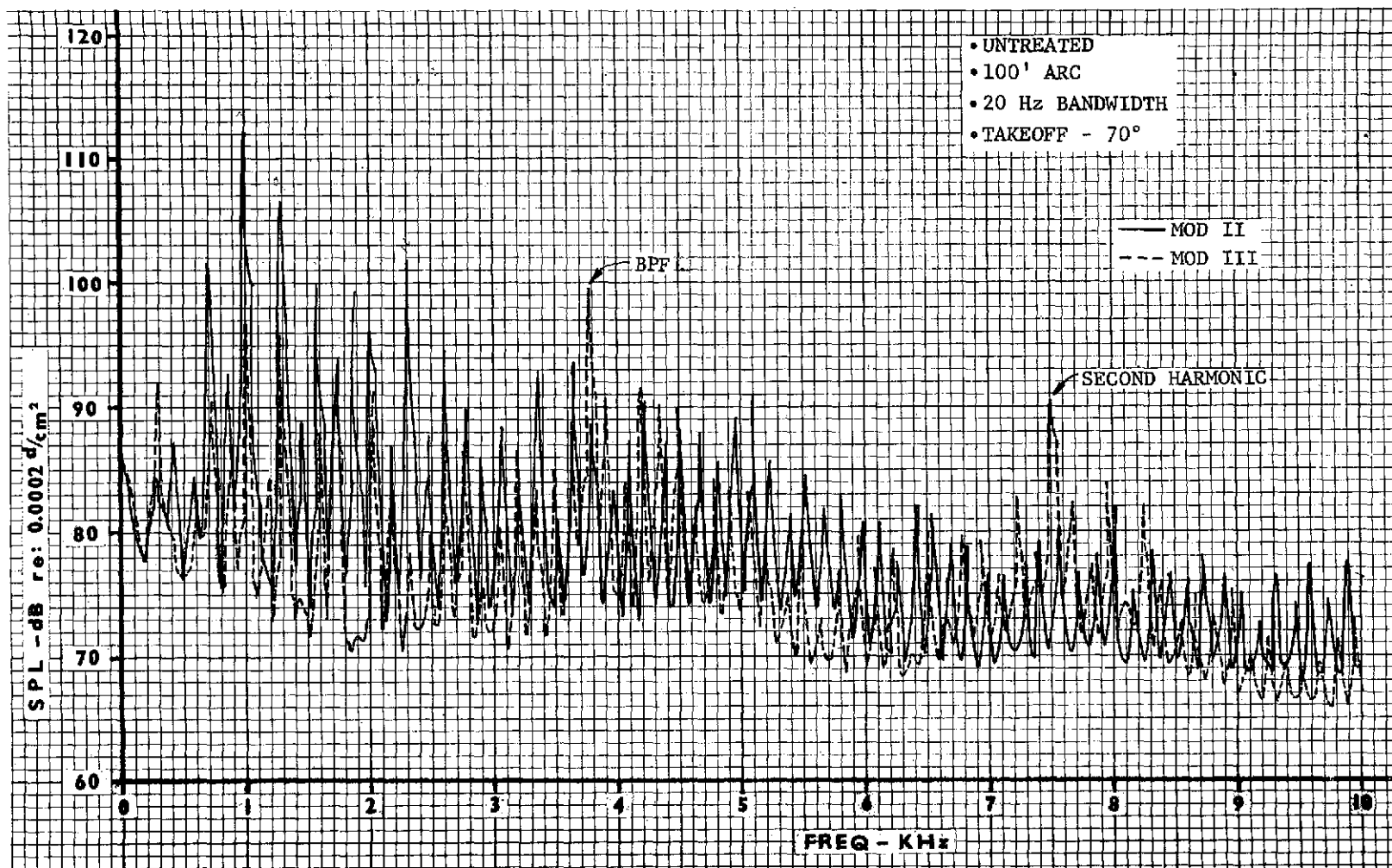


Figure 9. Fan C Scale Model, Mod II and Mod III.

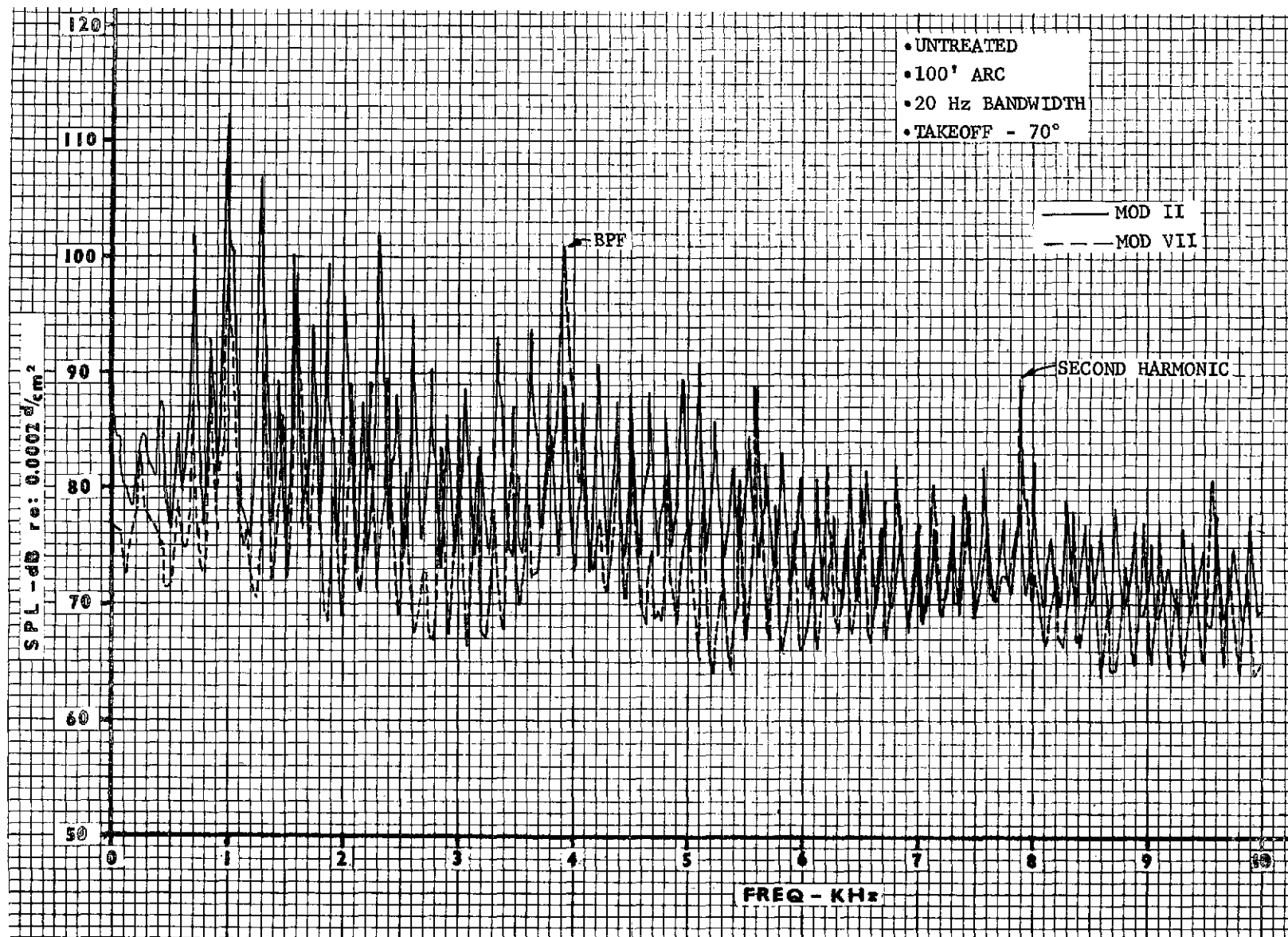


Figure 10. Fan C Scale Model, Mod II and Mod VII.

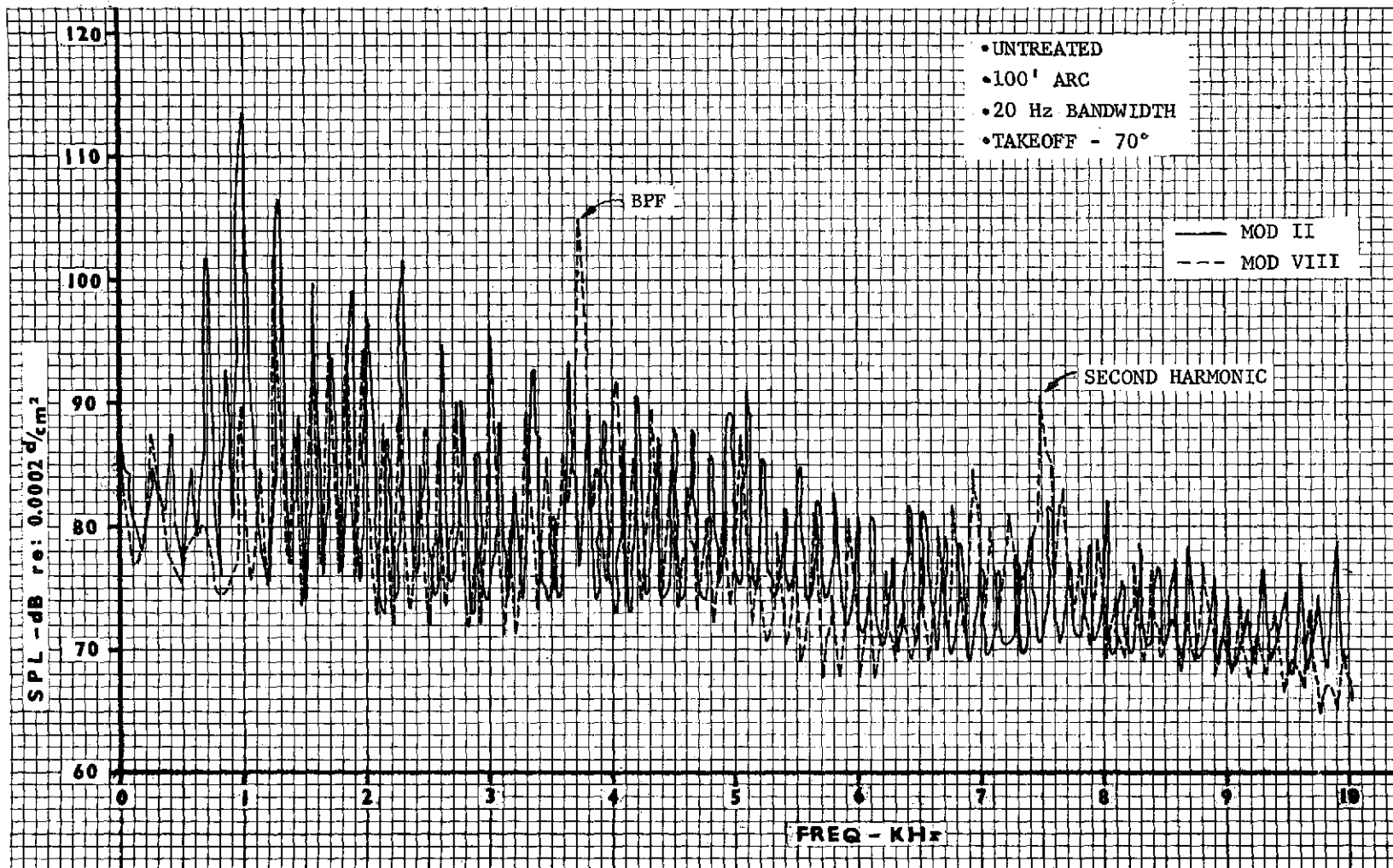


Figure 11. Fan C Scale Model, Mod II and Mod VIII.

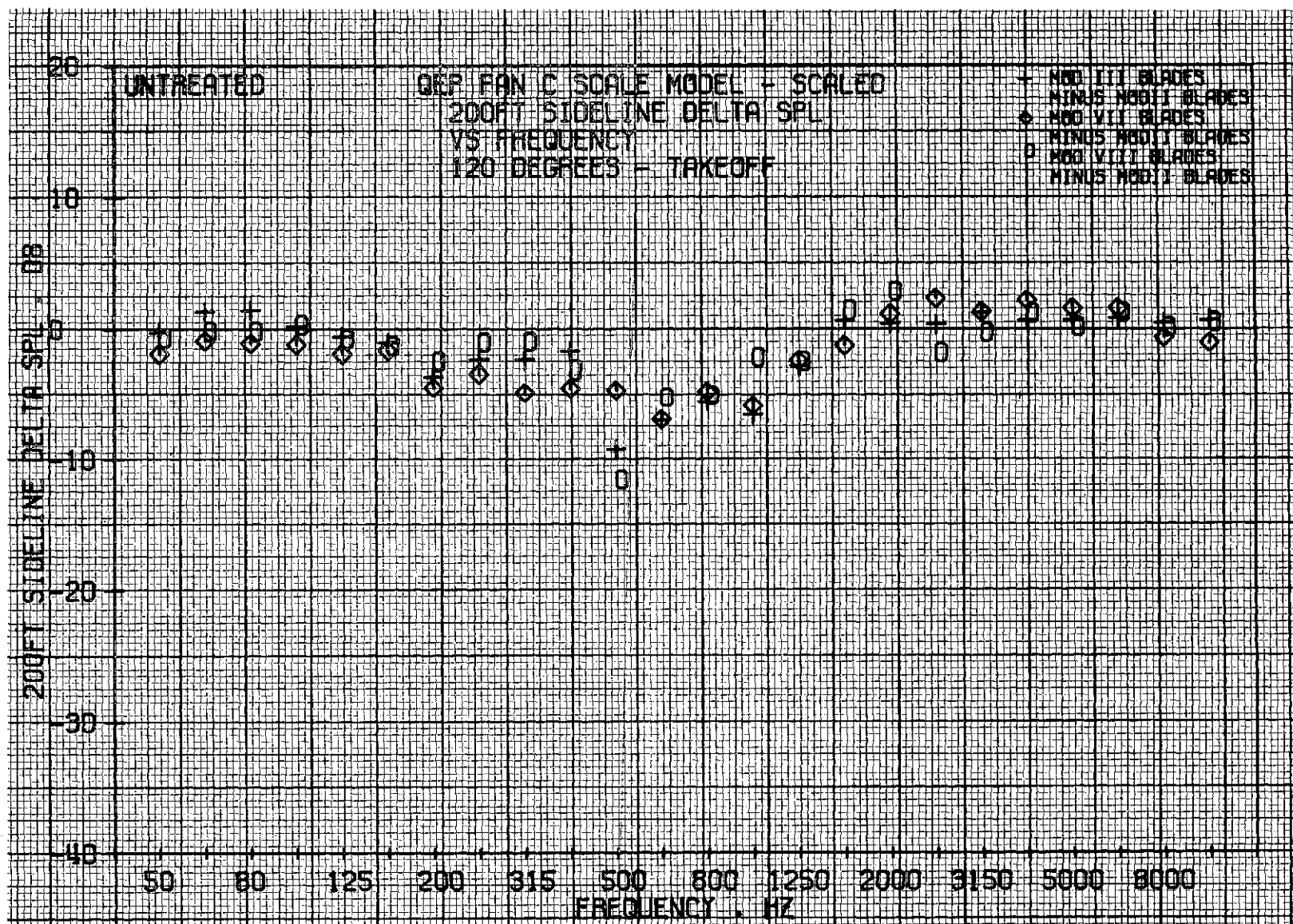


Figure 12. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 120°, Takeoff.

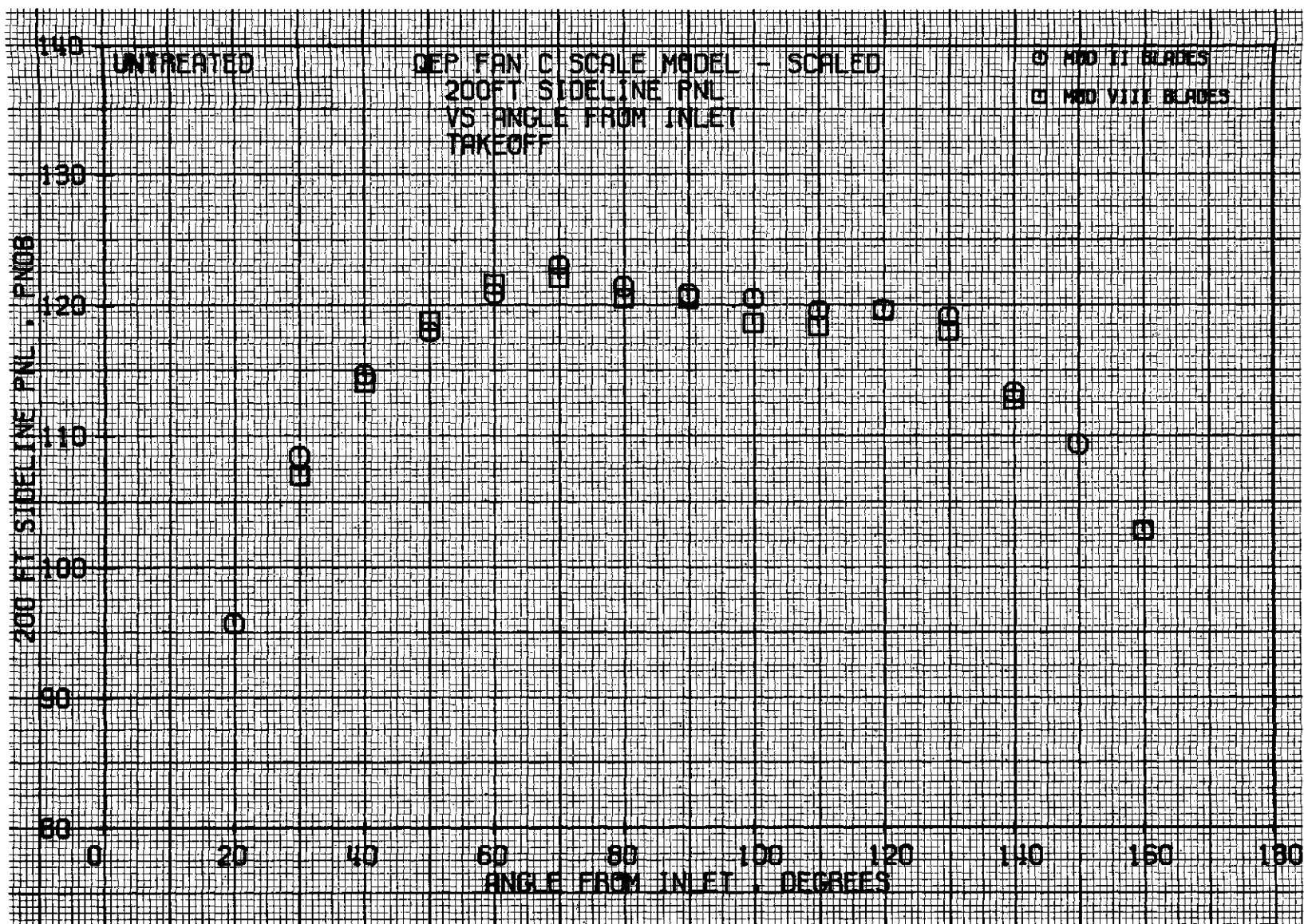


Figure 13. QEP Fan C Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Takeoff.

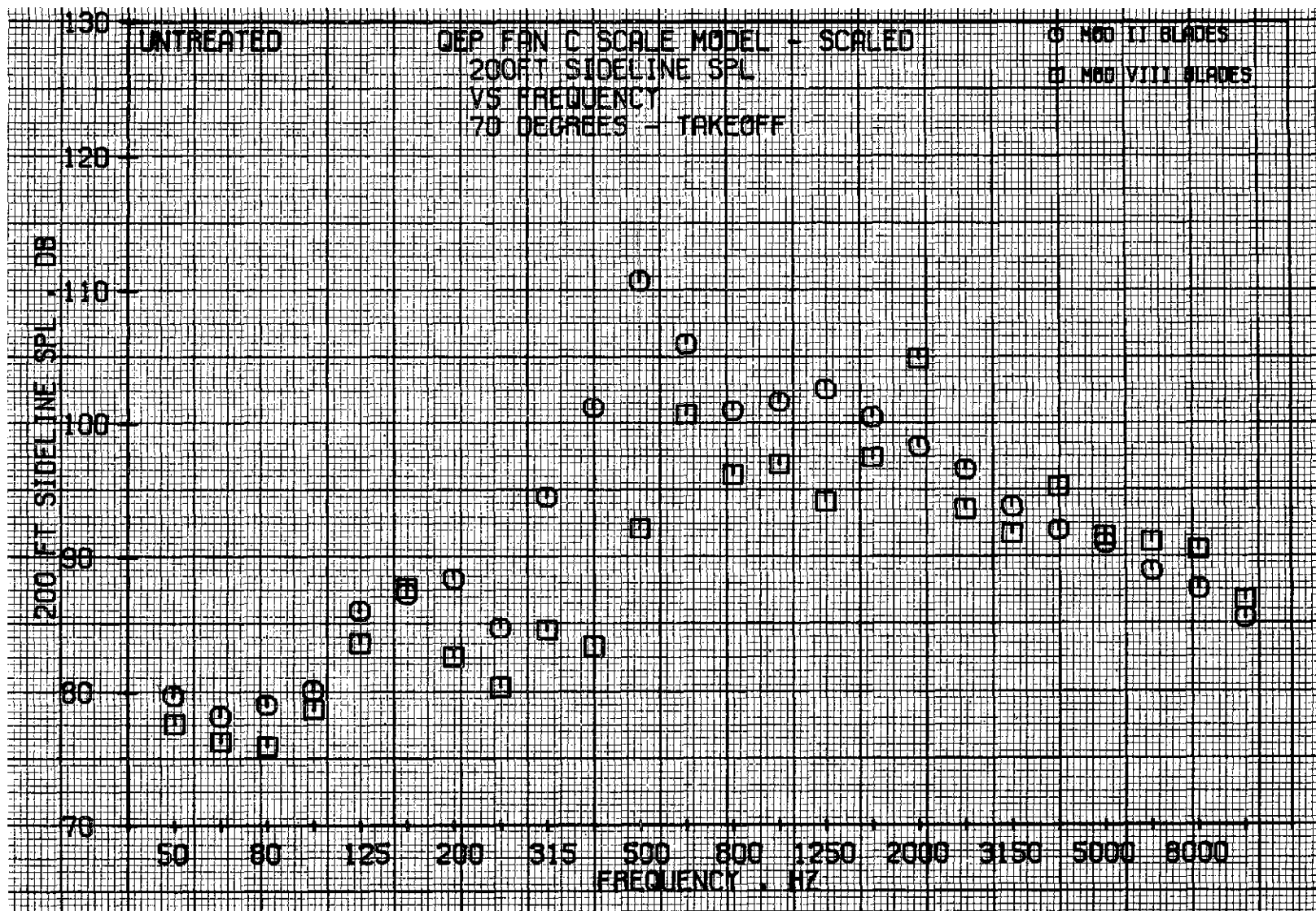


Figure 14. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 70° Takeoff.

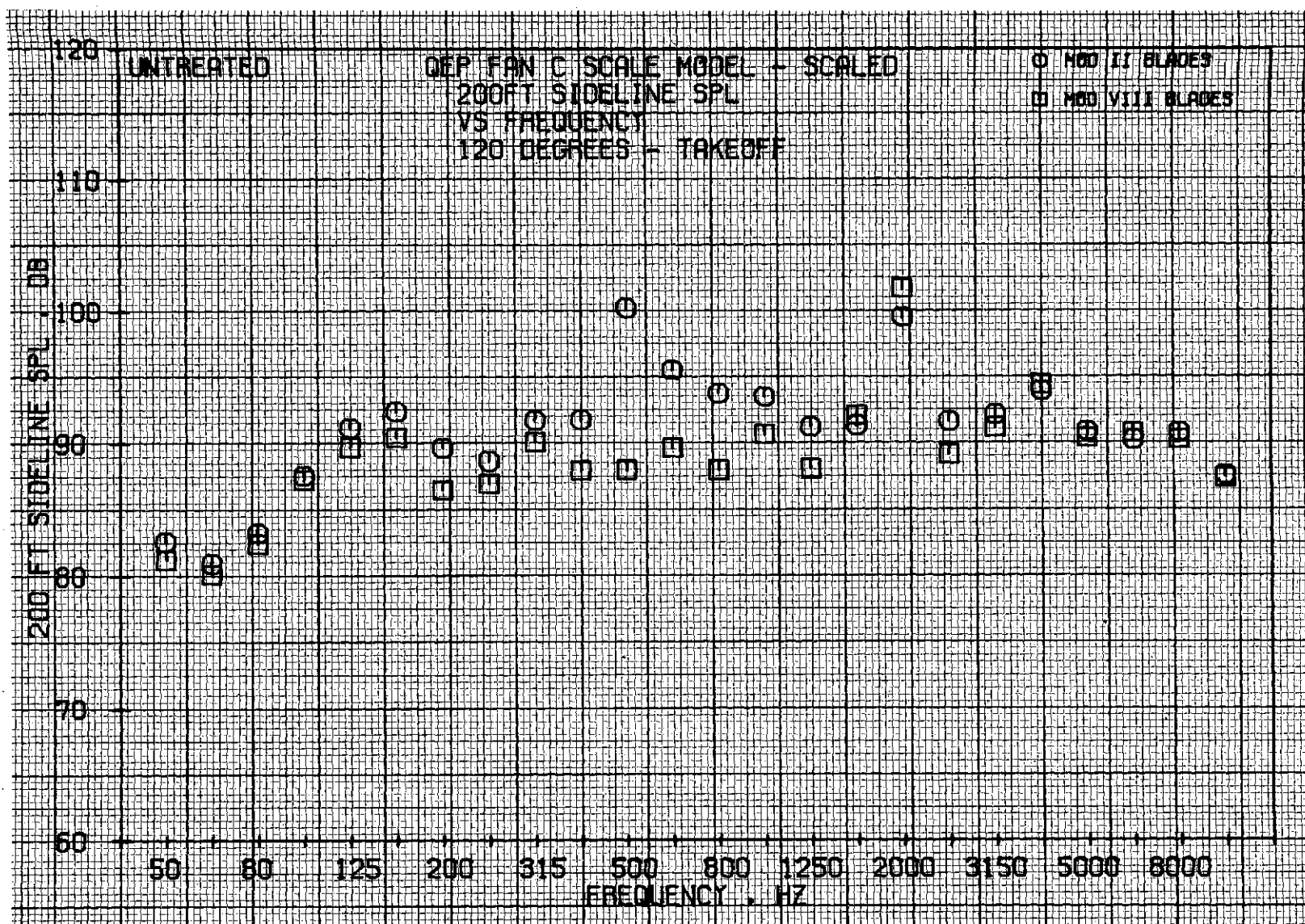


Figure 15. QEP Fan C Scale Model, 200-Foot Sideline SPL Vs. Frequency, 120°, Takeoff.

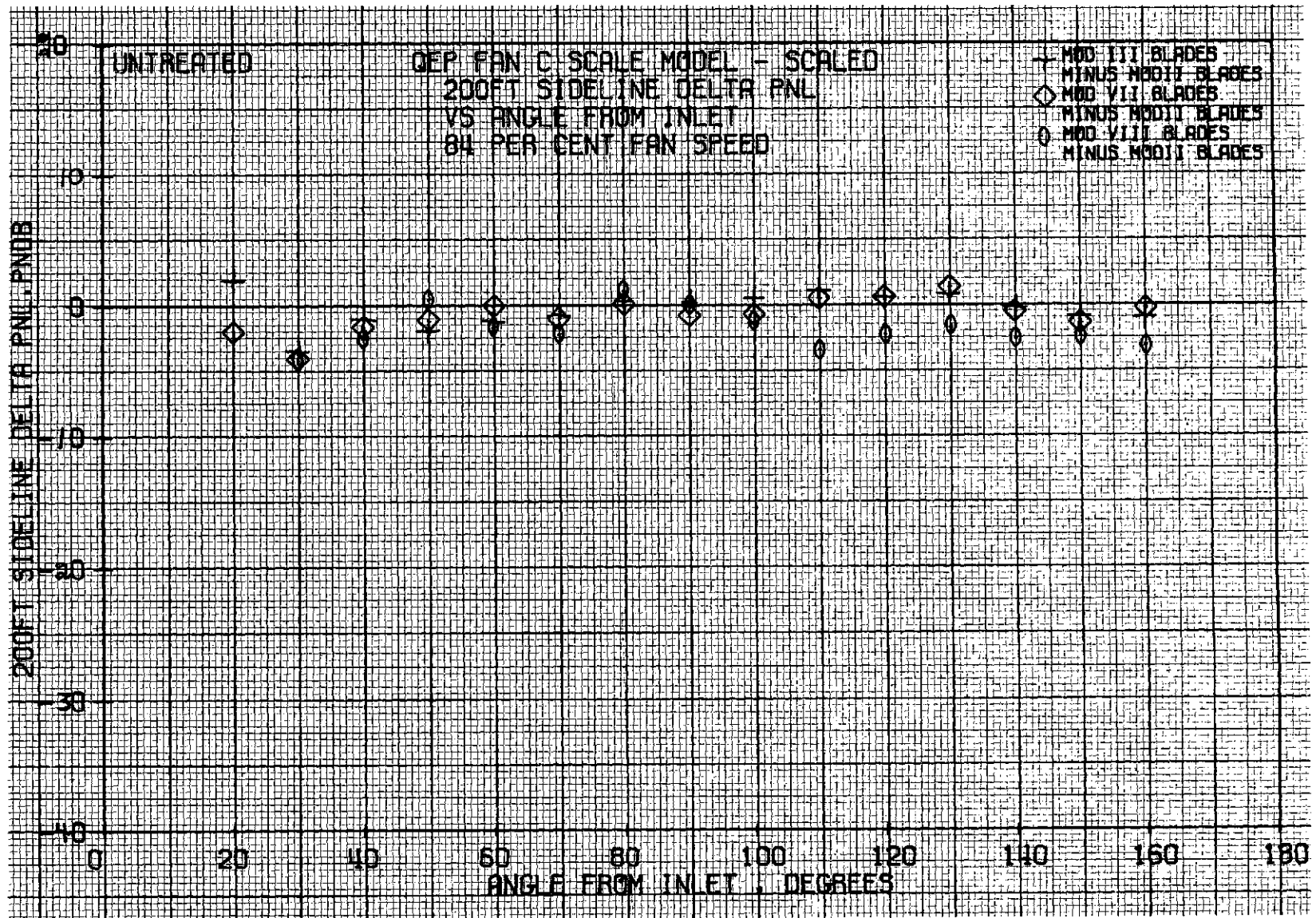


Figure 16. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 84% Fan Speed.

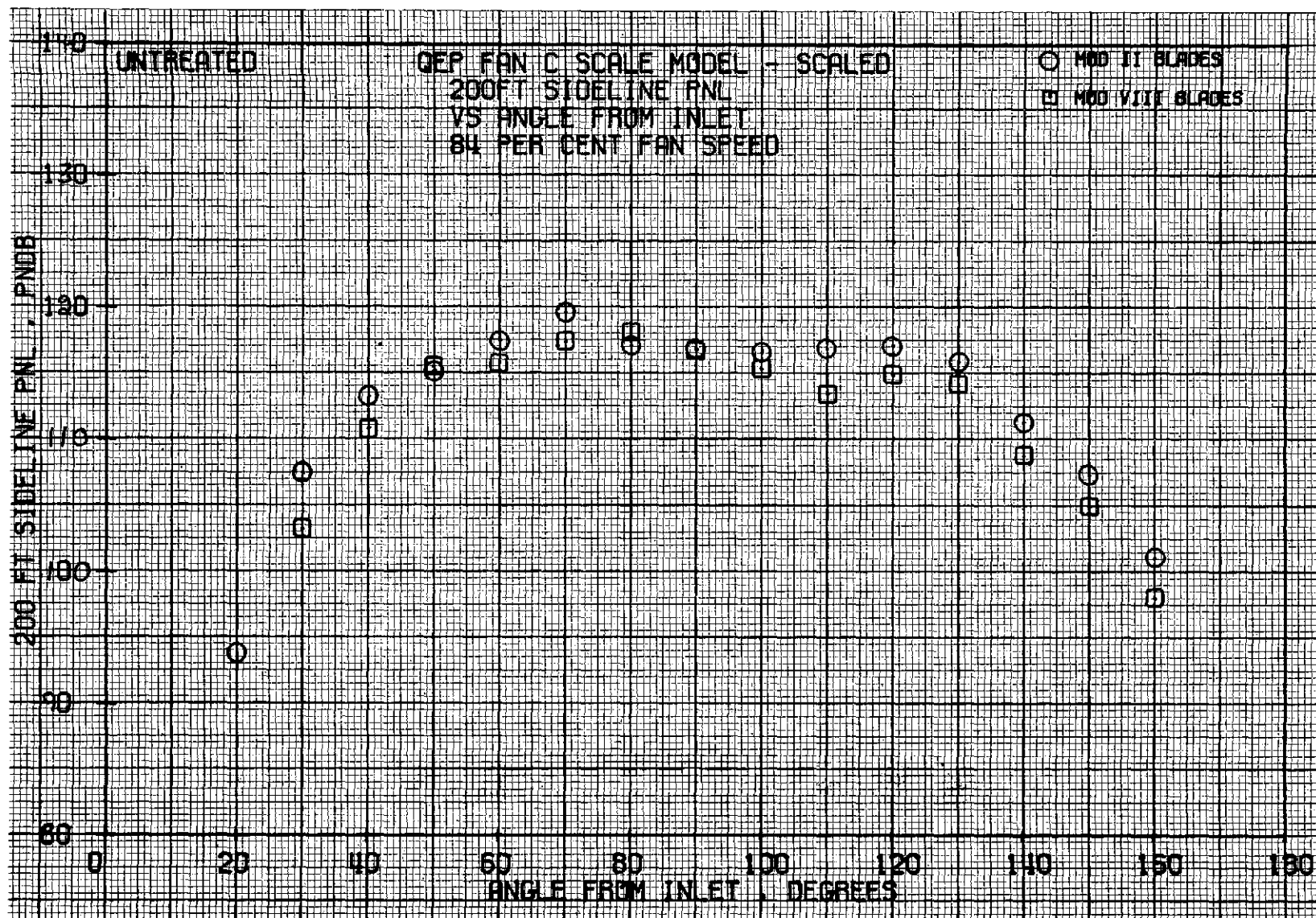


Figure 17. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 84% Fan Speed.

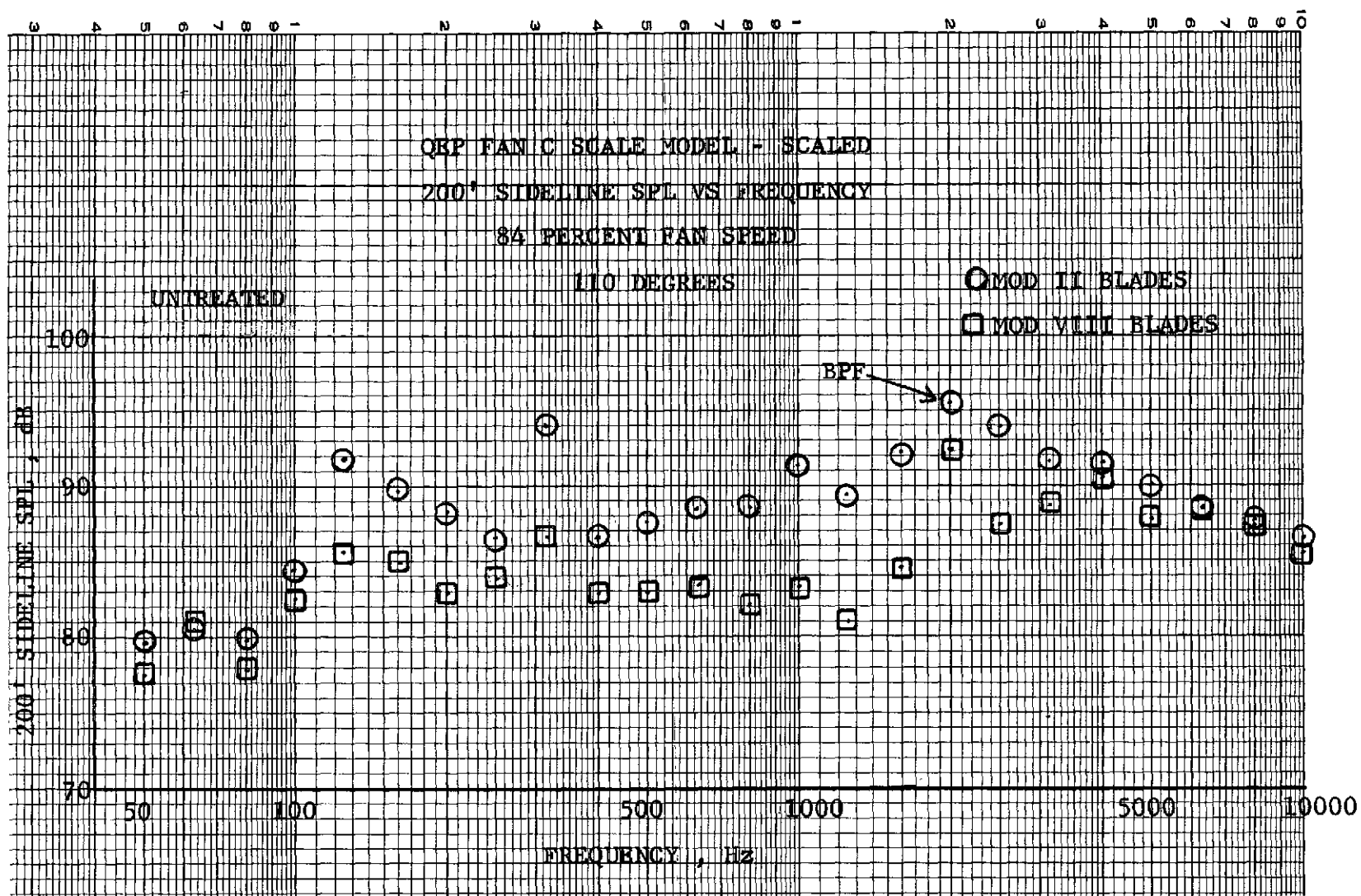


Figure 18. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 84% Fan Speed, 110°.

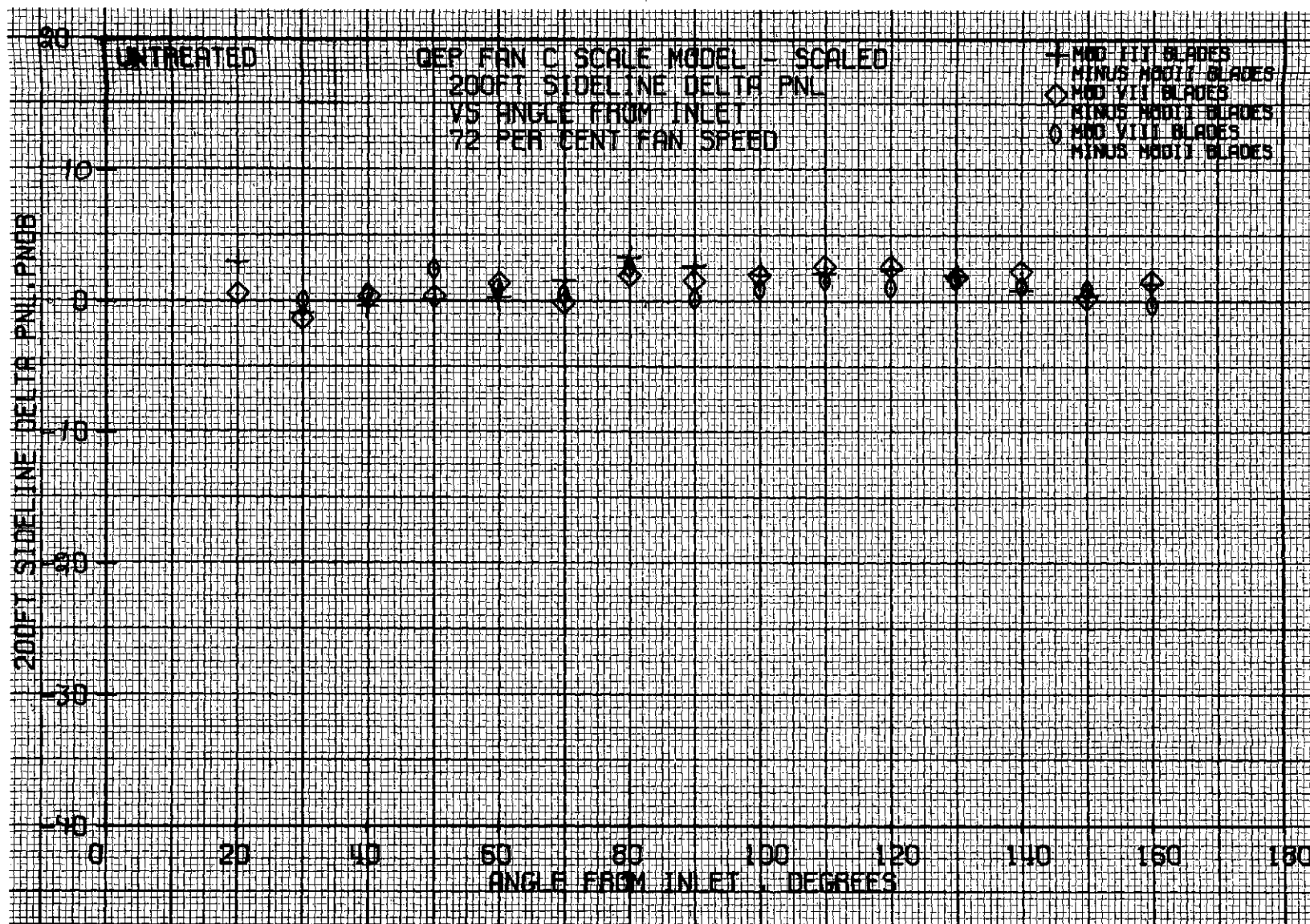


Figure 19. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 72% Fan Speed.

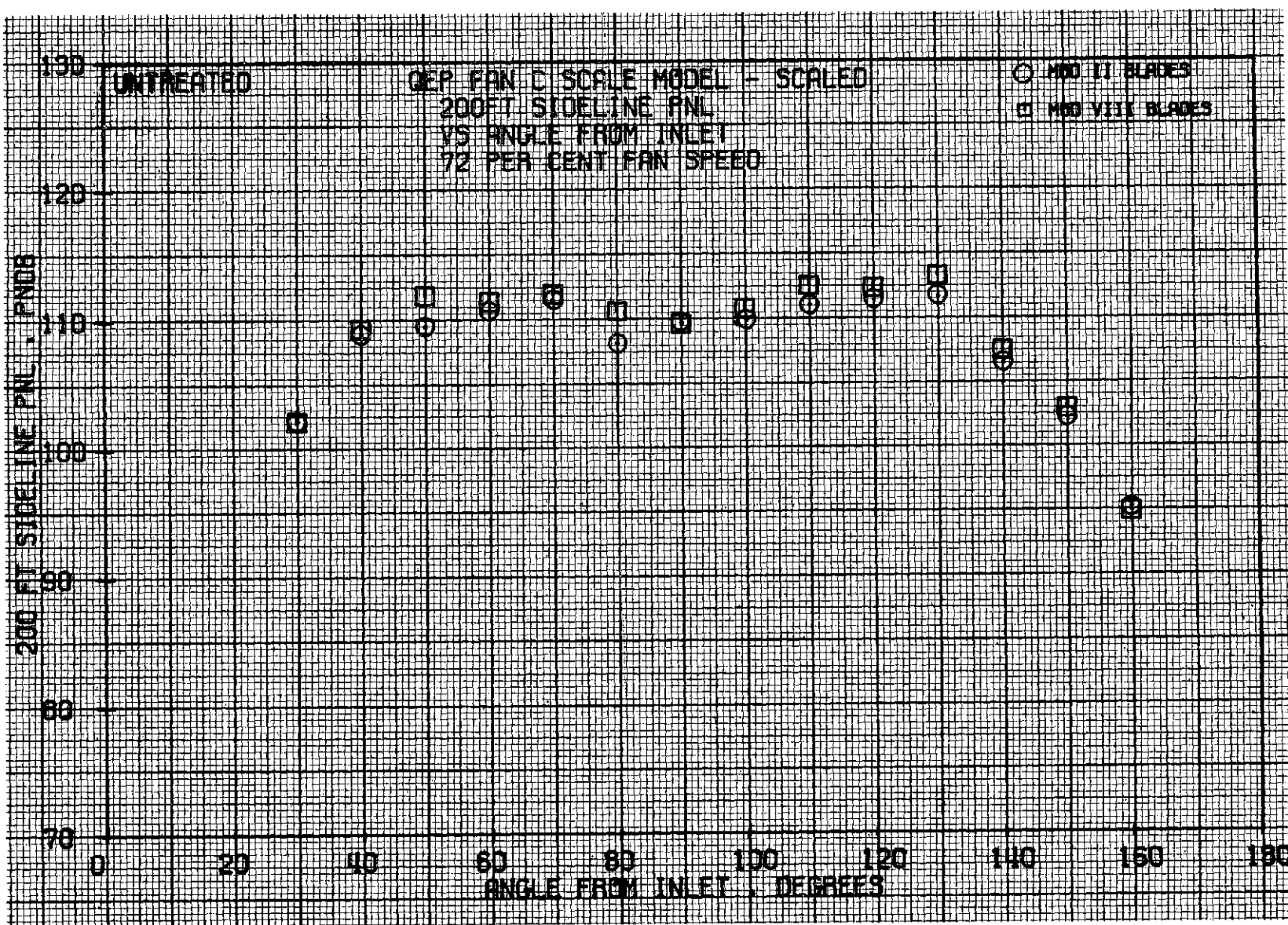


Figure 20. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 72% Fan Speed.

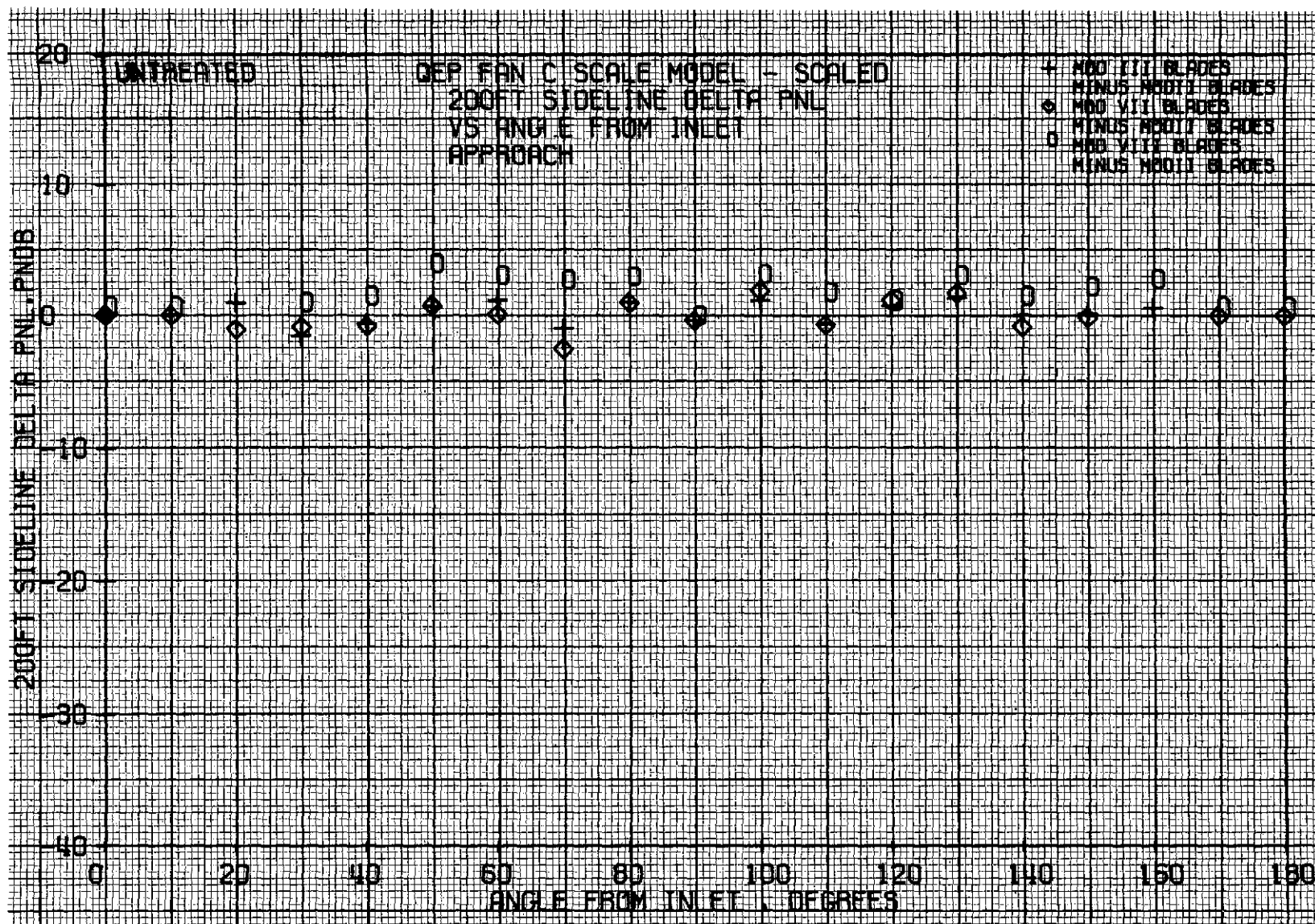


Figure 21. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Approach.

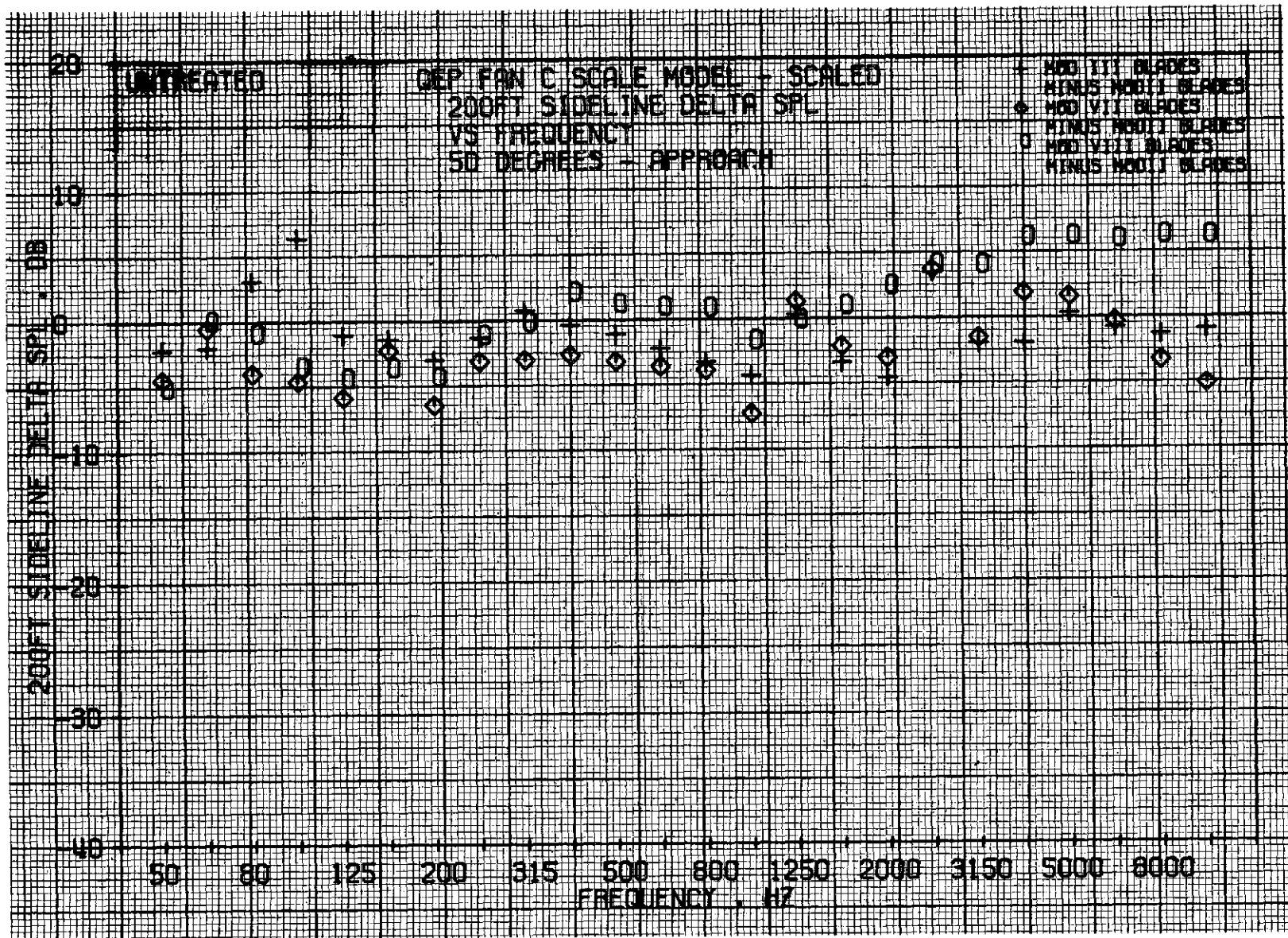


Figure 22. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 50°, Approach.

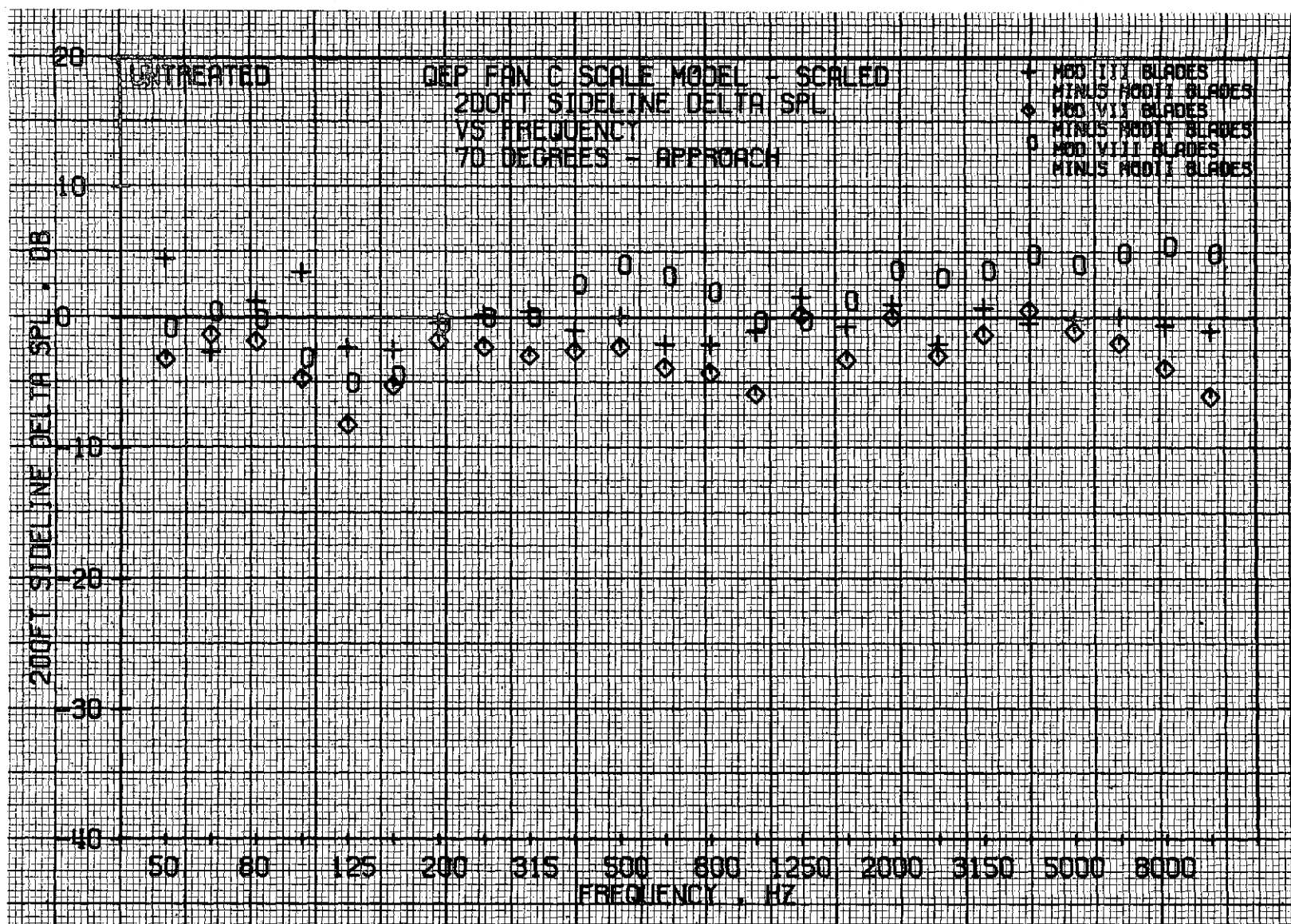


Figure 23. QEP Fan C Scale Model, 200-Foot Sideline Delta SPL Vs. Frequency, 70°, Approach.

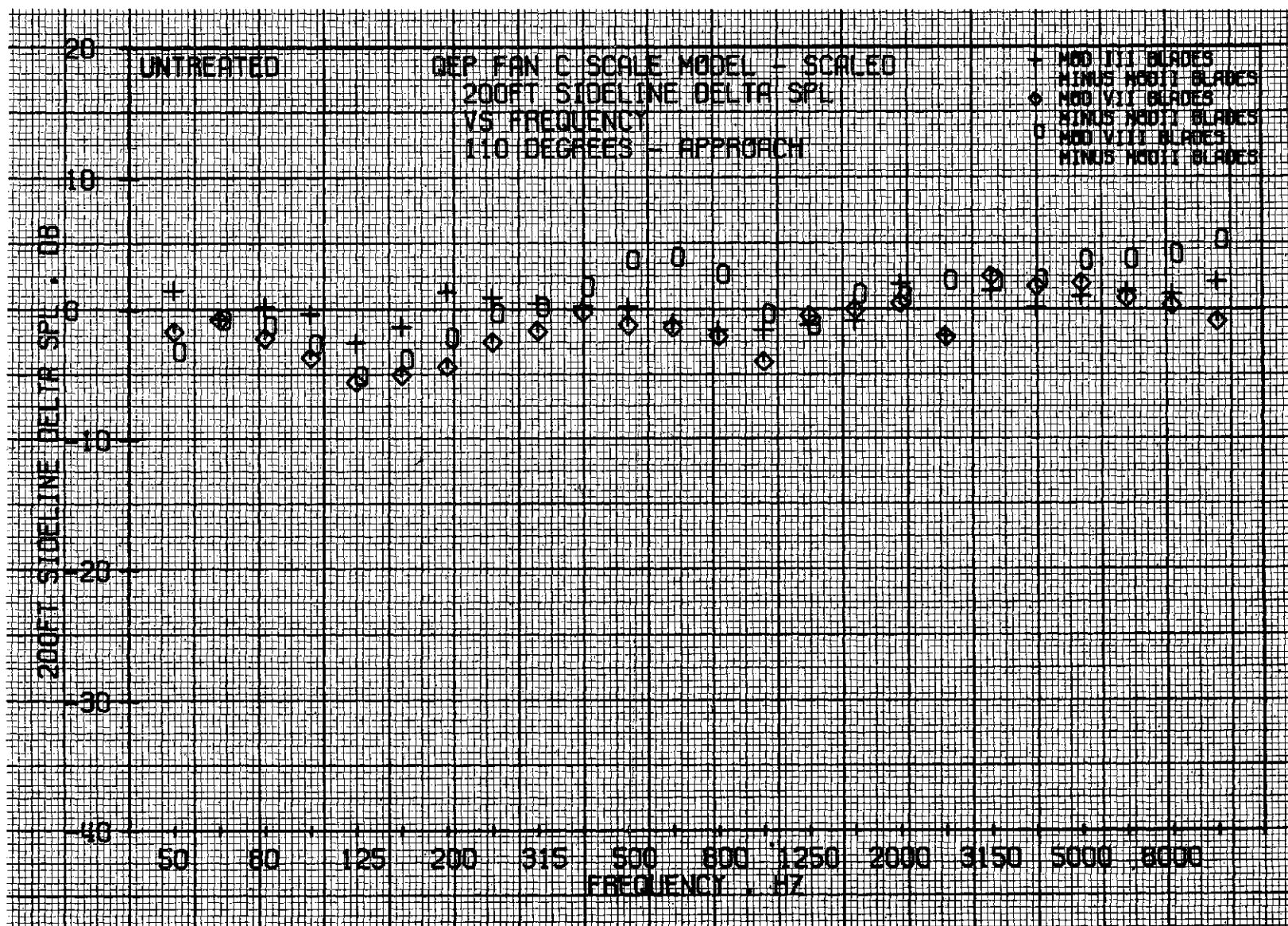


Figure 24. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 110°, Approach.

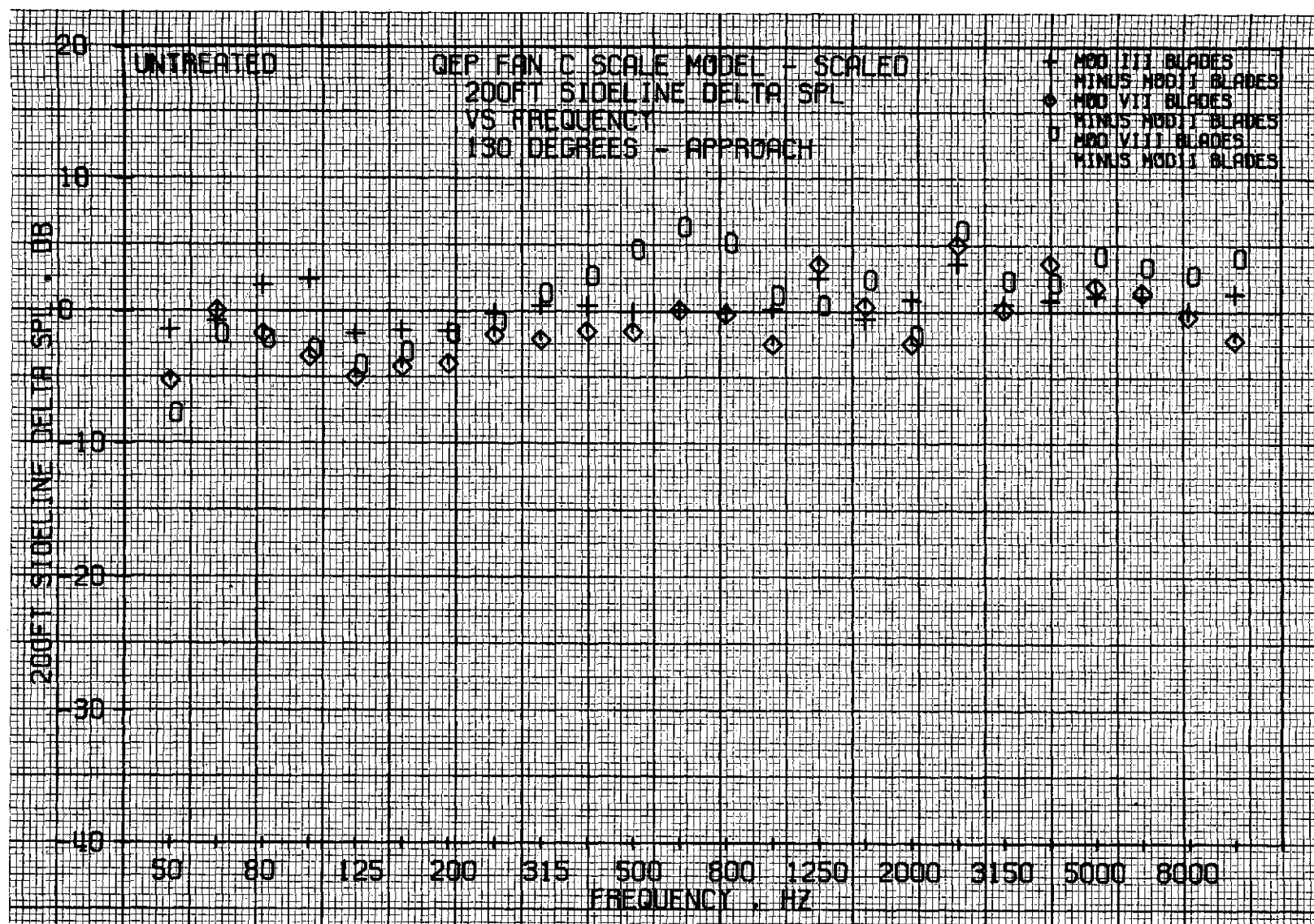


Figure 25. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 130°, Approach.

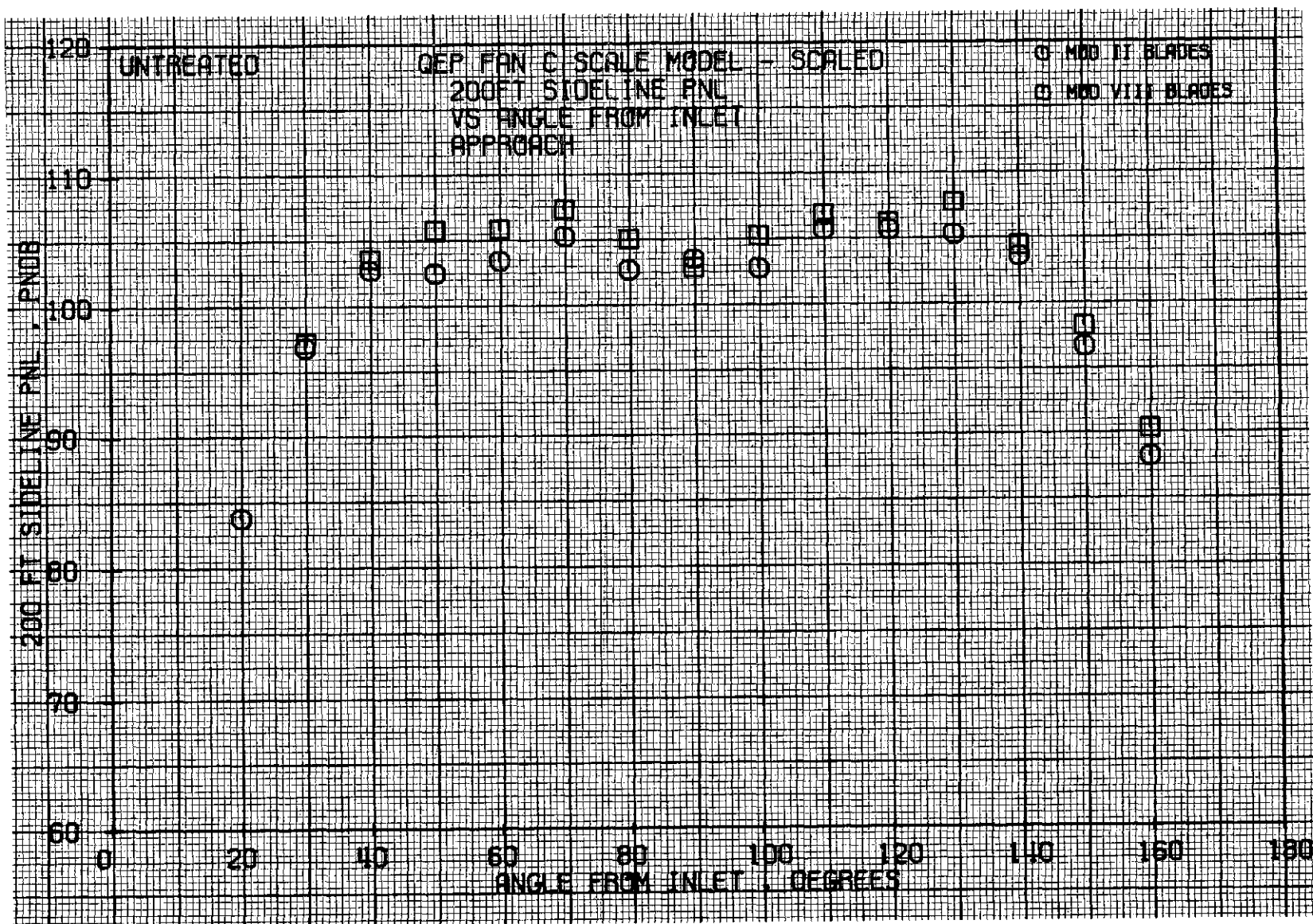


Figure 26. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Approach.

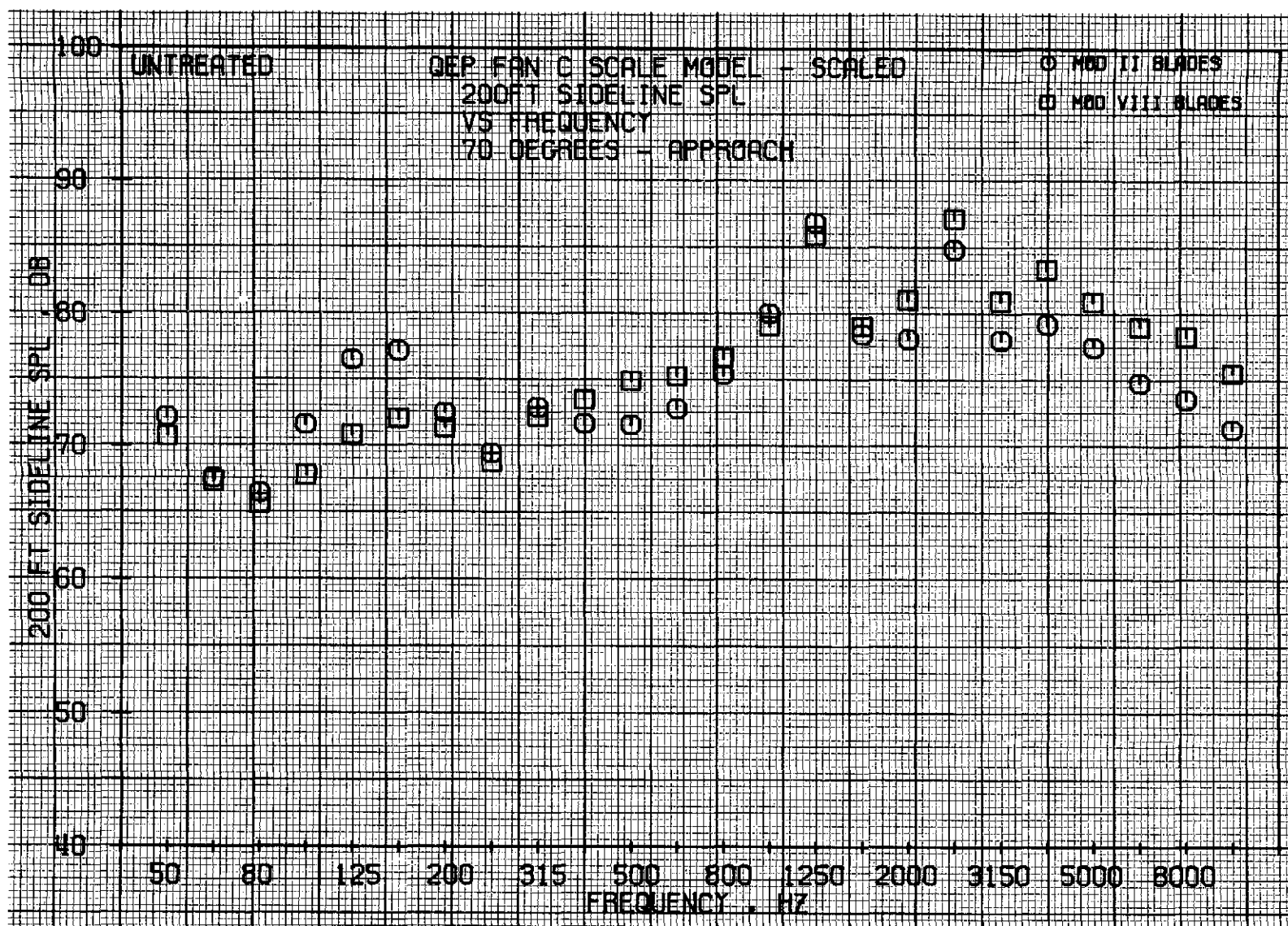


Figure 27. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 70°, Approach.

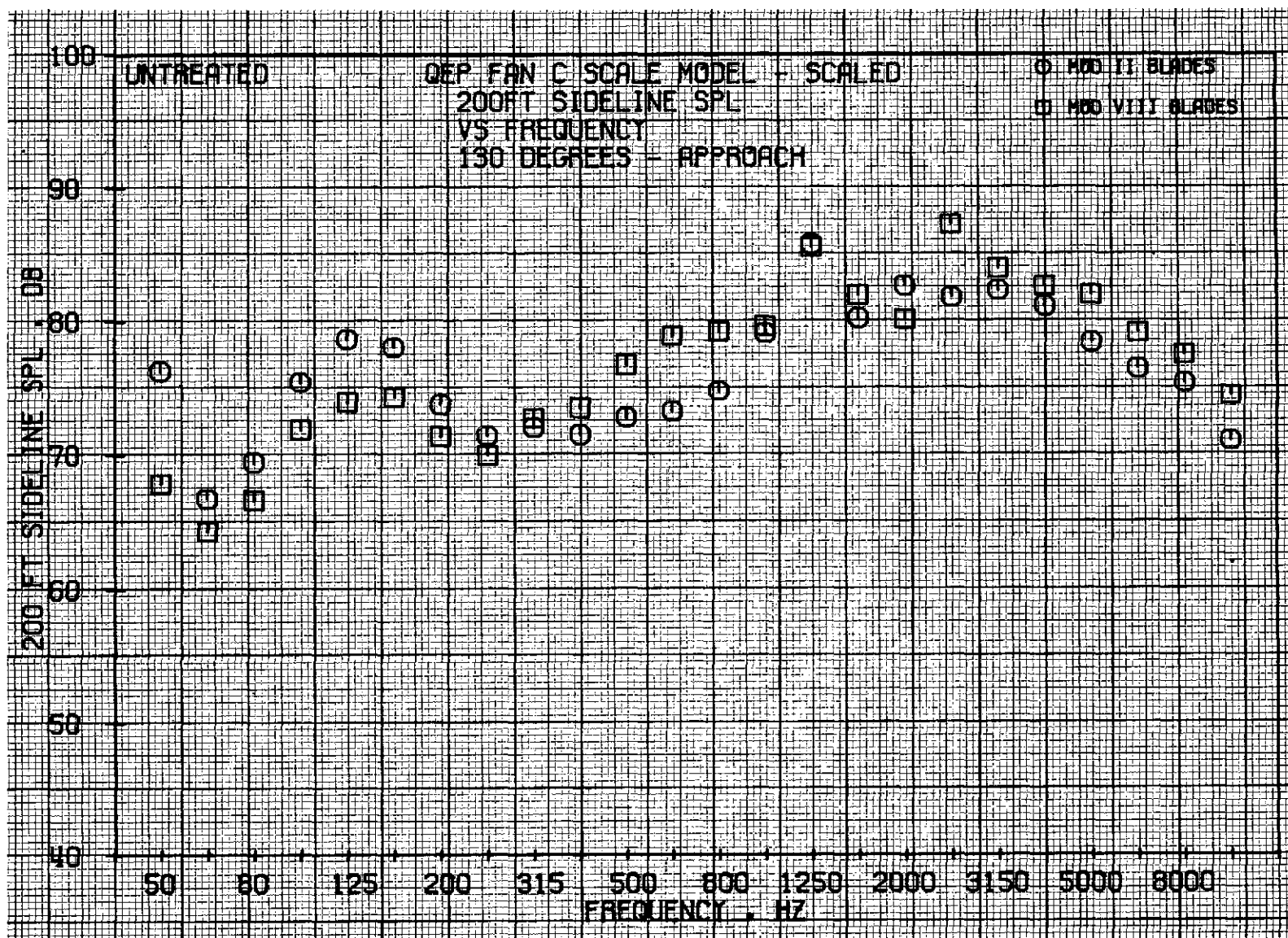


Figure 28. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 130°, Approach.

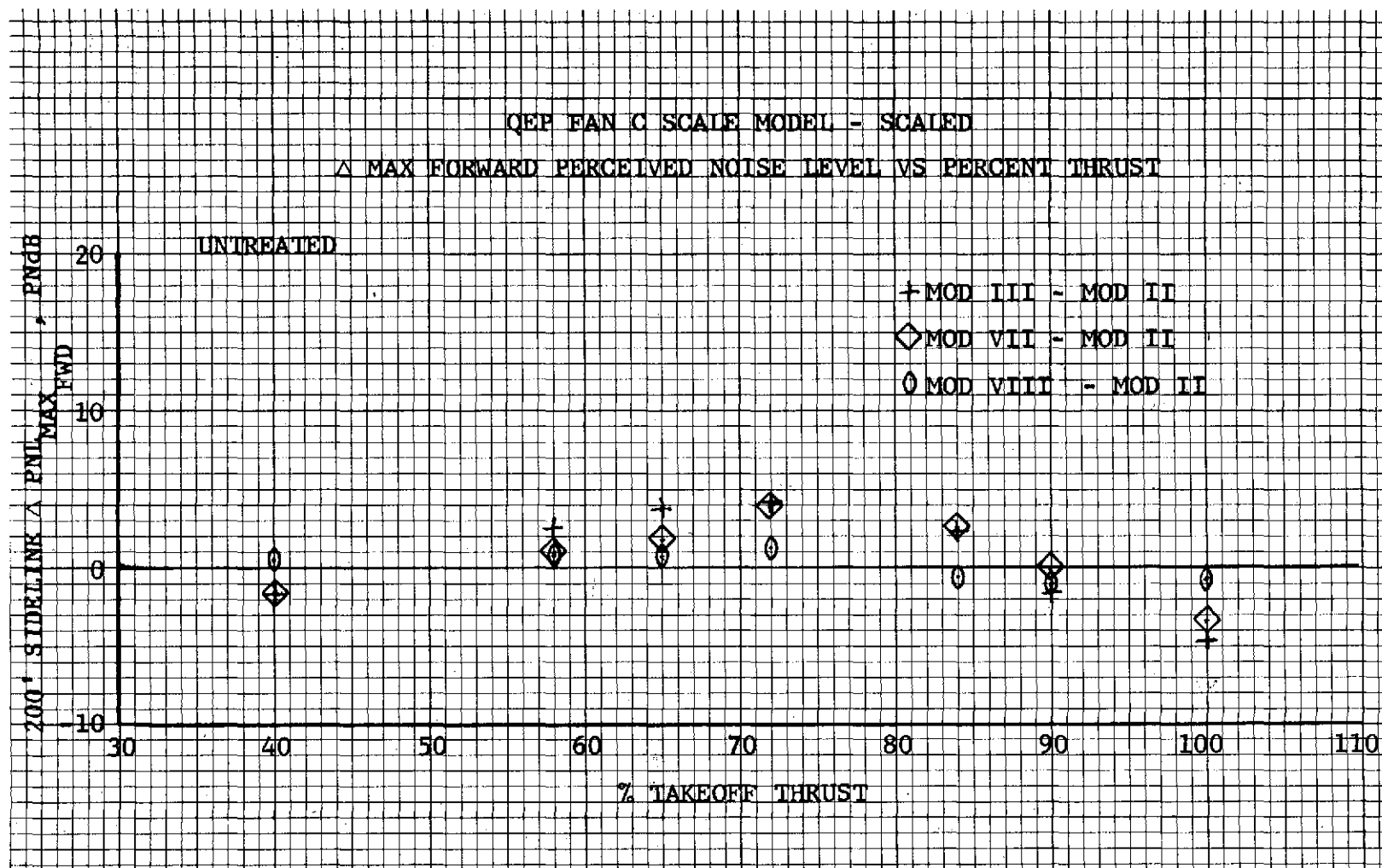


Figure 29. QEP Fan C Scale Model, Scaled Δ Max. Forward-Perceived Noise Level Vs. Percent Thrust.

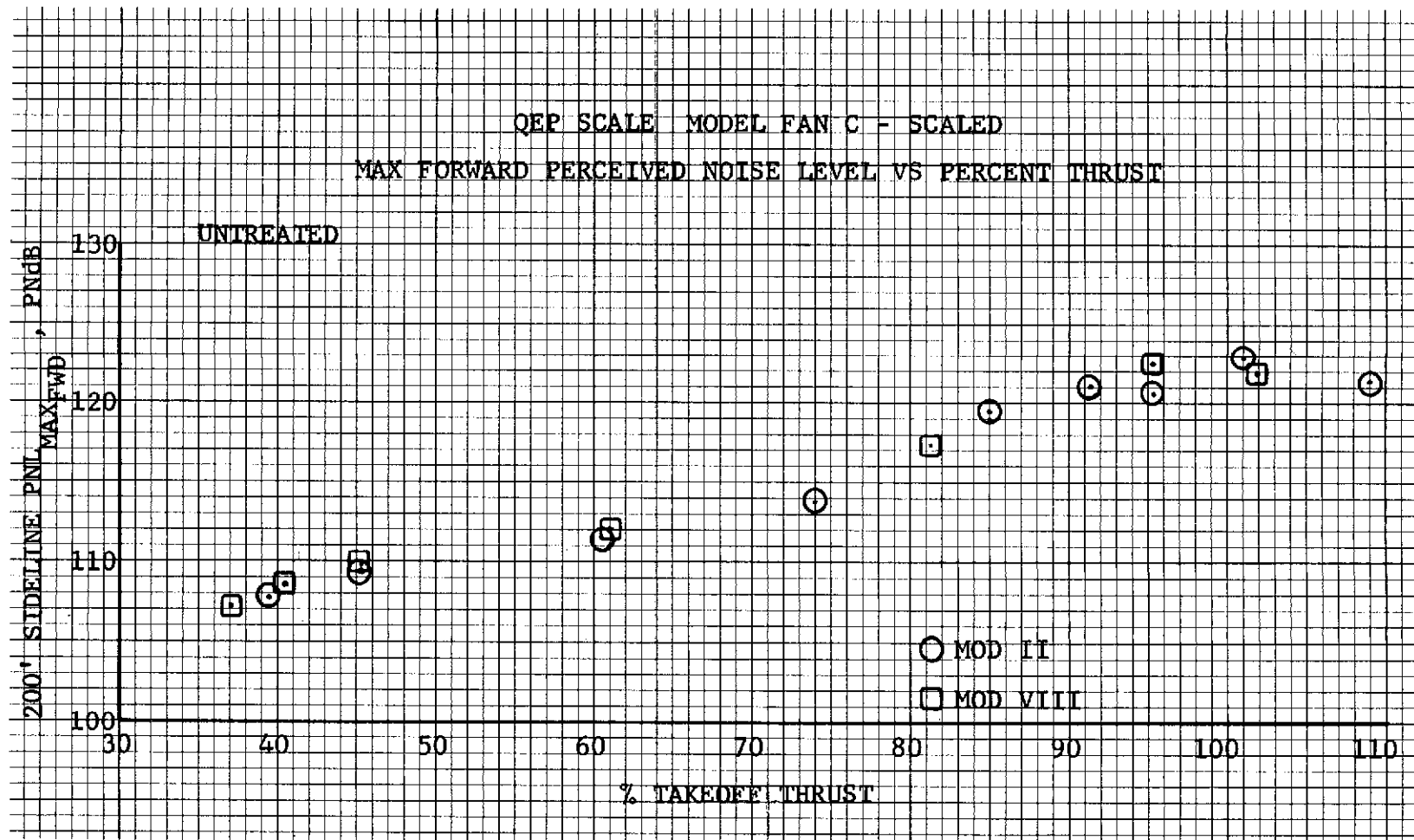


Figure 30. QEP Fan C Scale Model, Scaled Maximum Forward-Perceived Noise Level Vs. Percent Thrust.

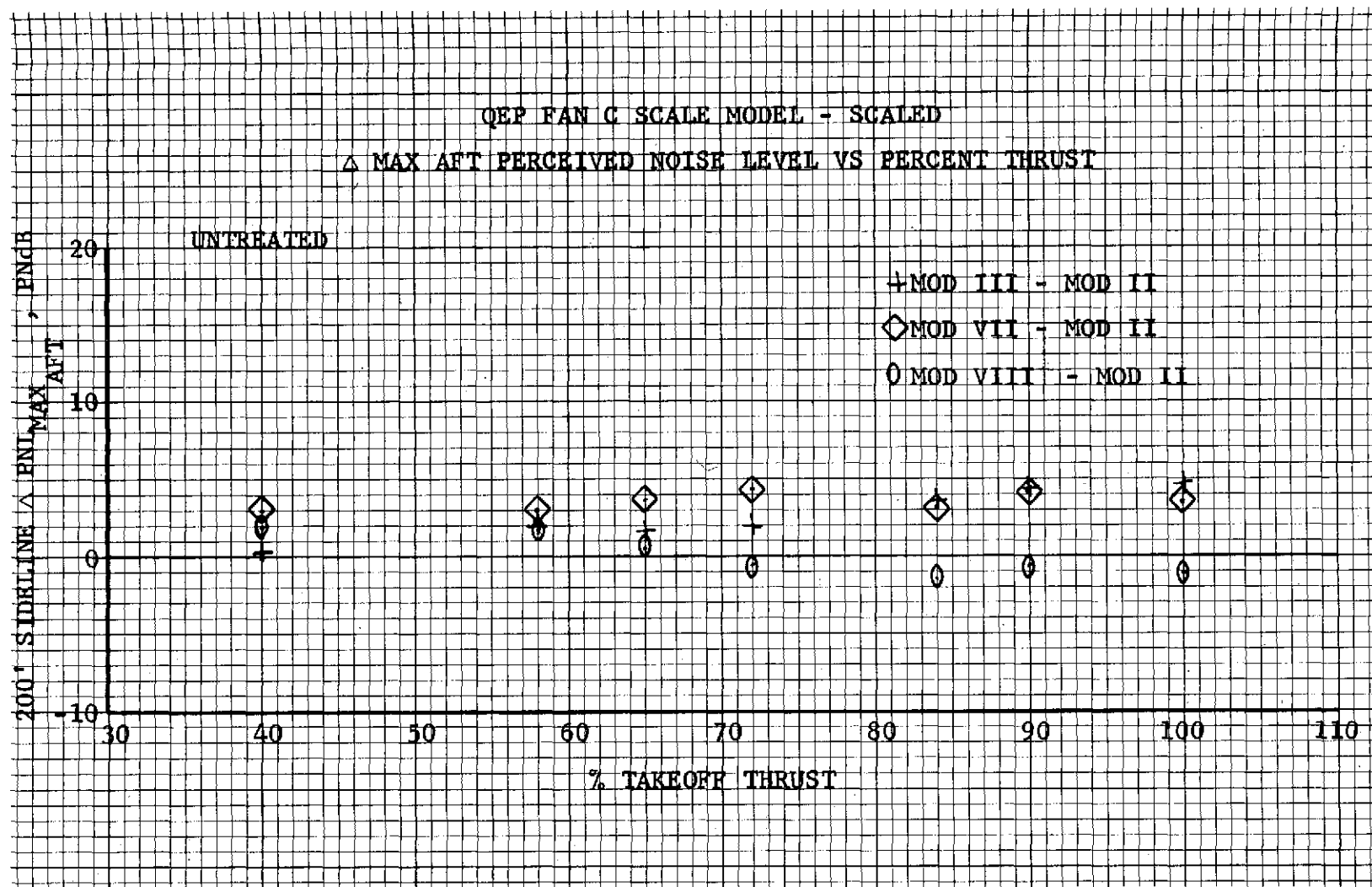


Figure 31. QEP Fan C Scale Model, Scaled Maximum-Perceived Noise Level Vs. Percent Thrust.

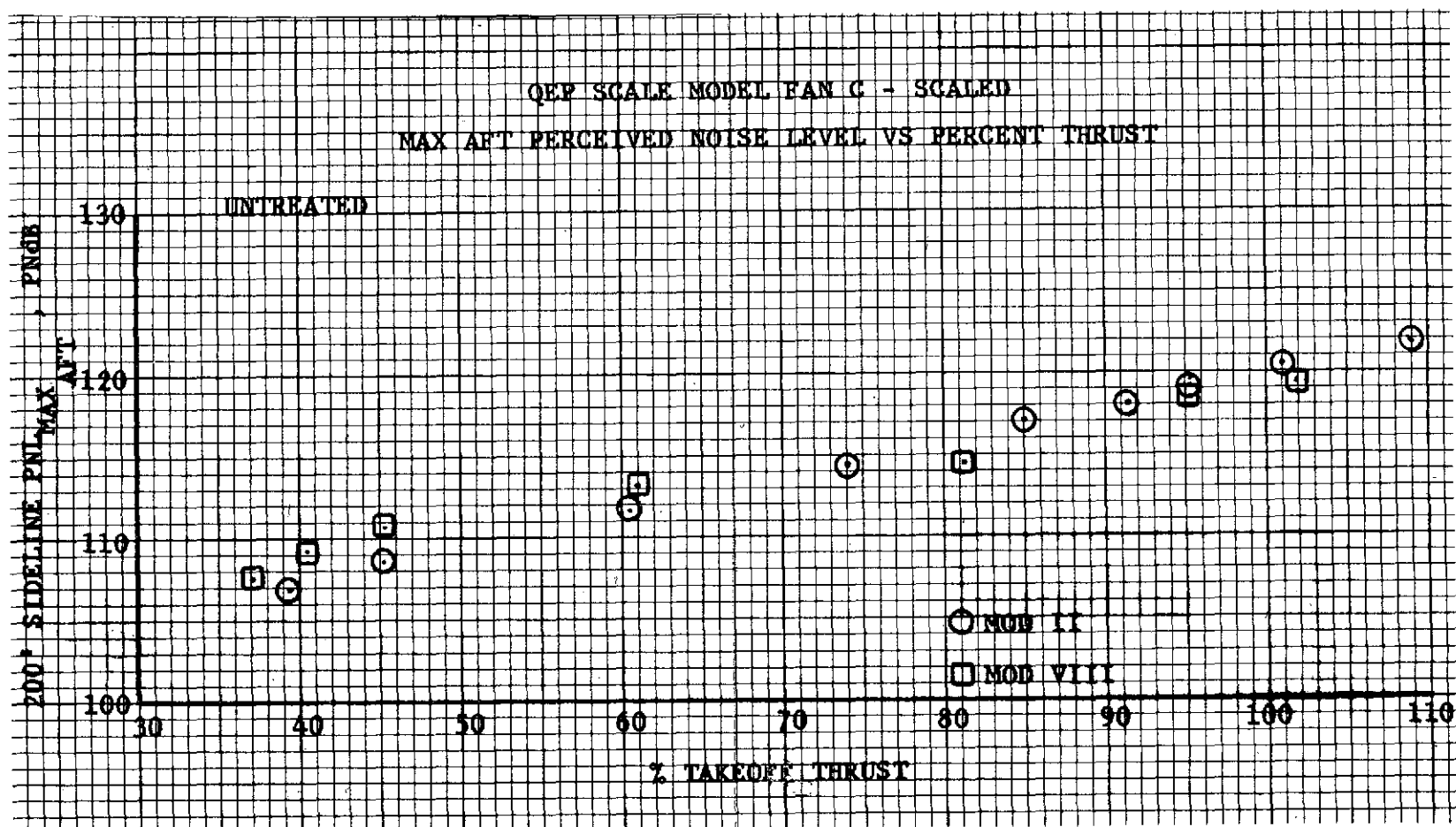


Figure 32. QEP Fan C Scale Model, Maximum Aft-Perceived Noise Level Vs. Percent Thrust.

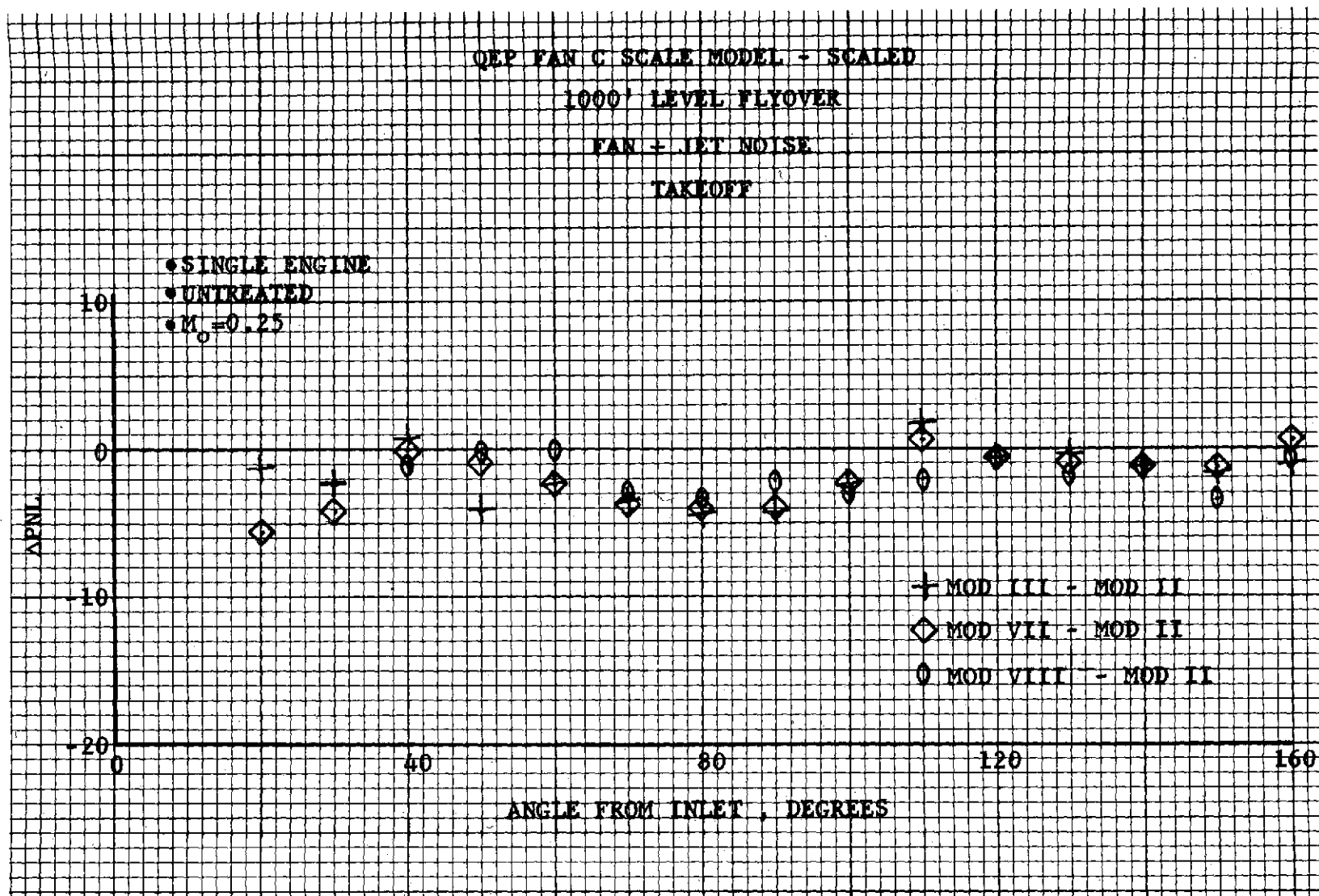


Figure 33. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

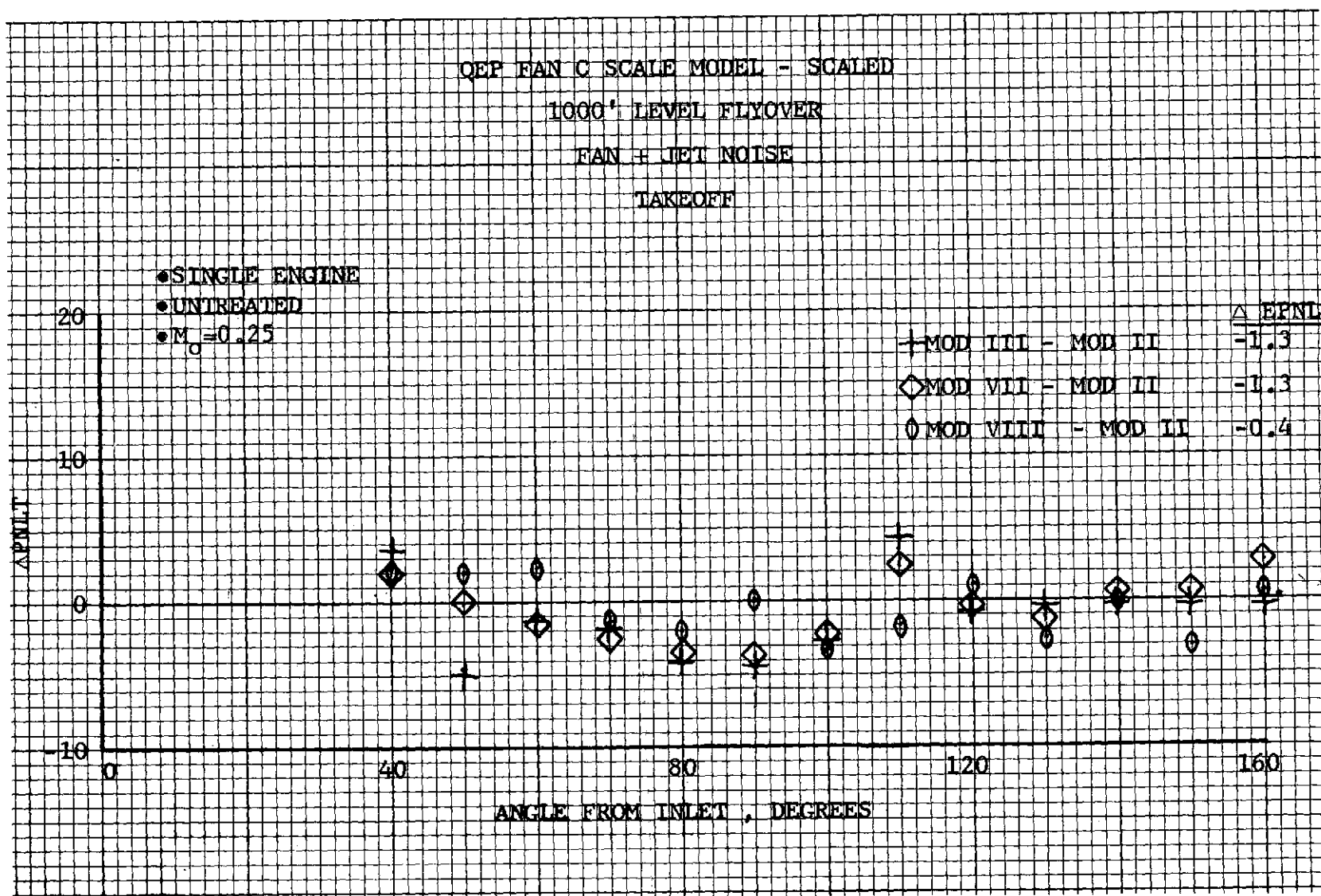


Figure 34. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

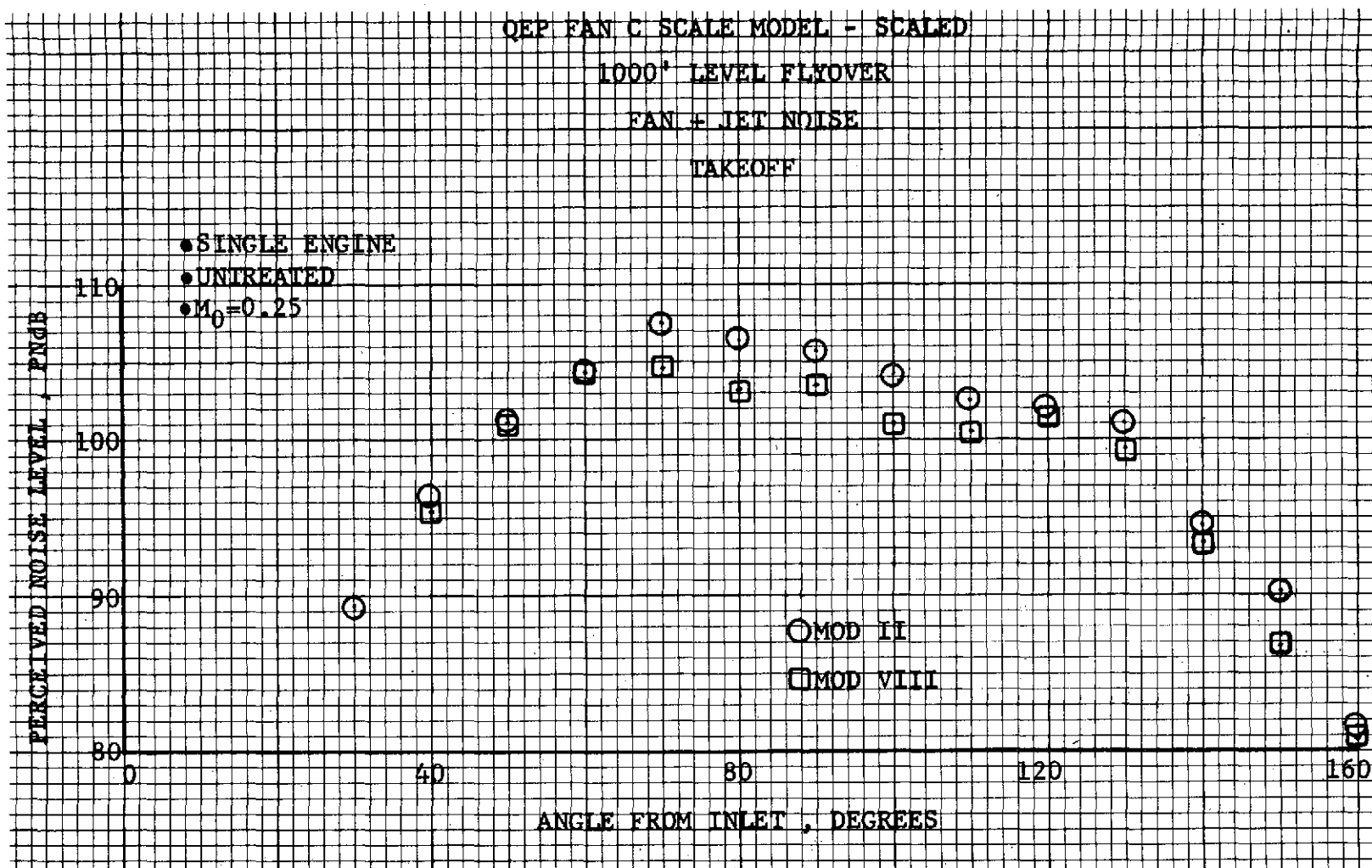


Figure 35. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

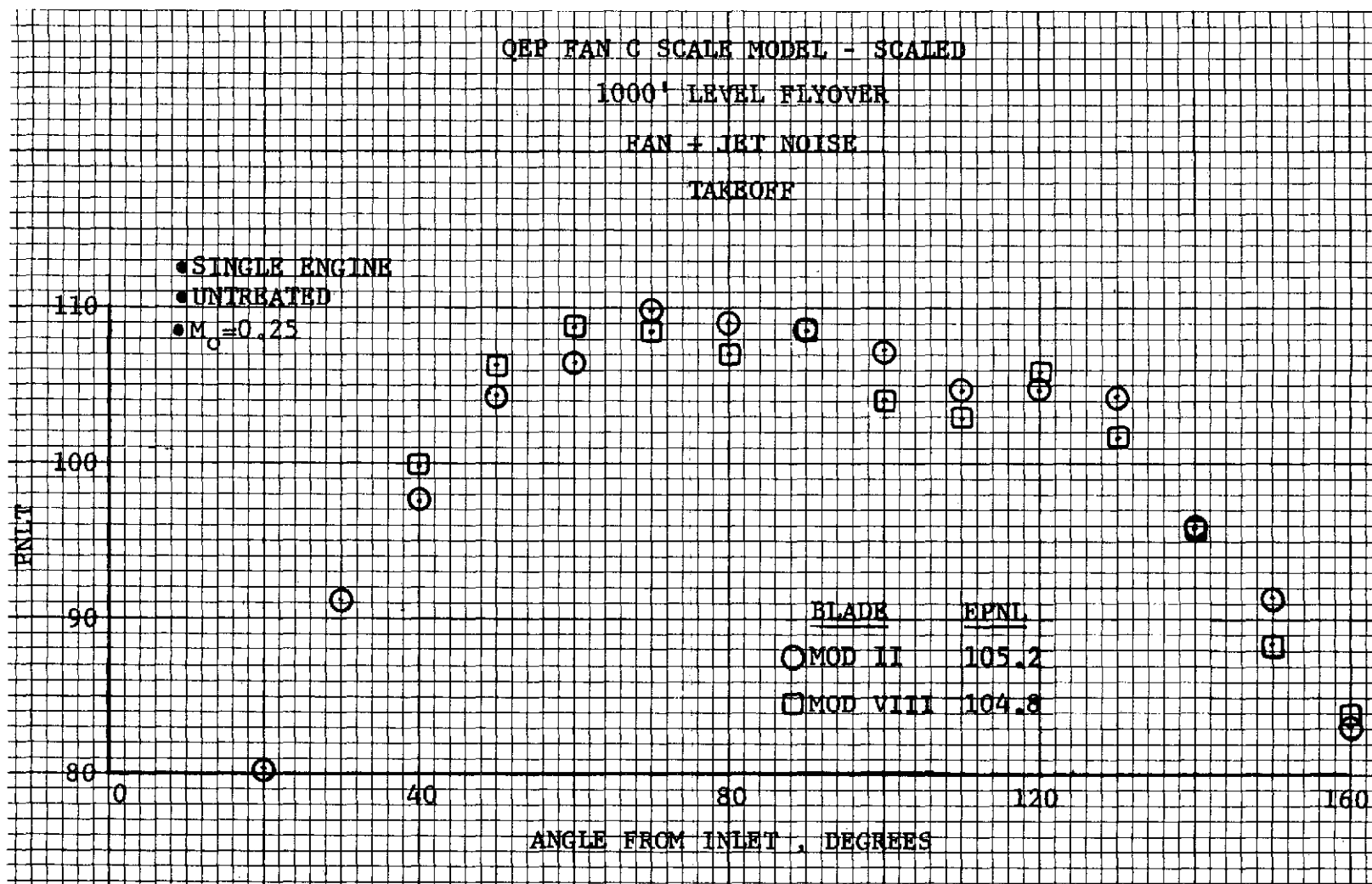


Figure 36. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

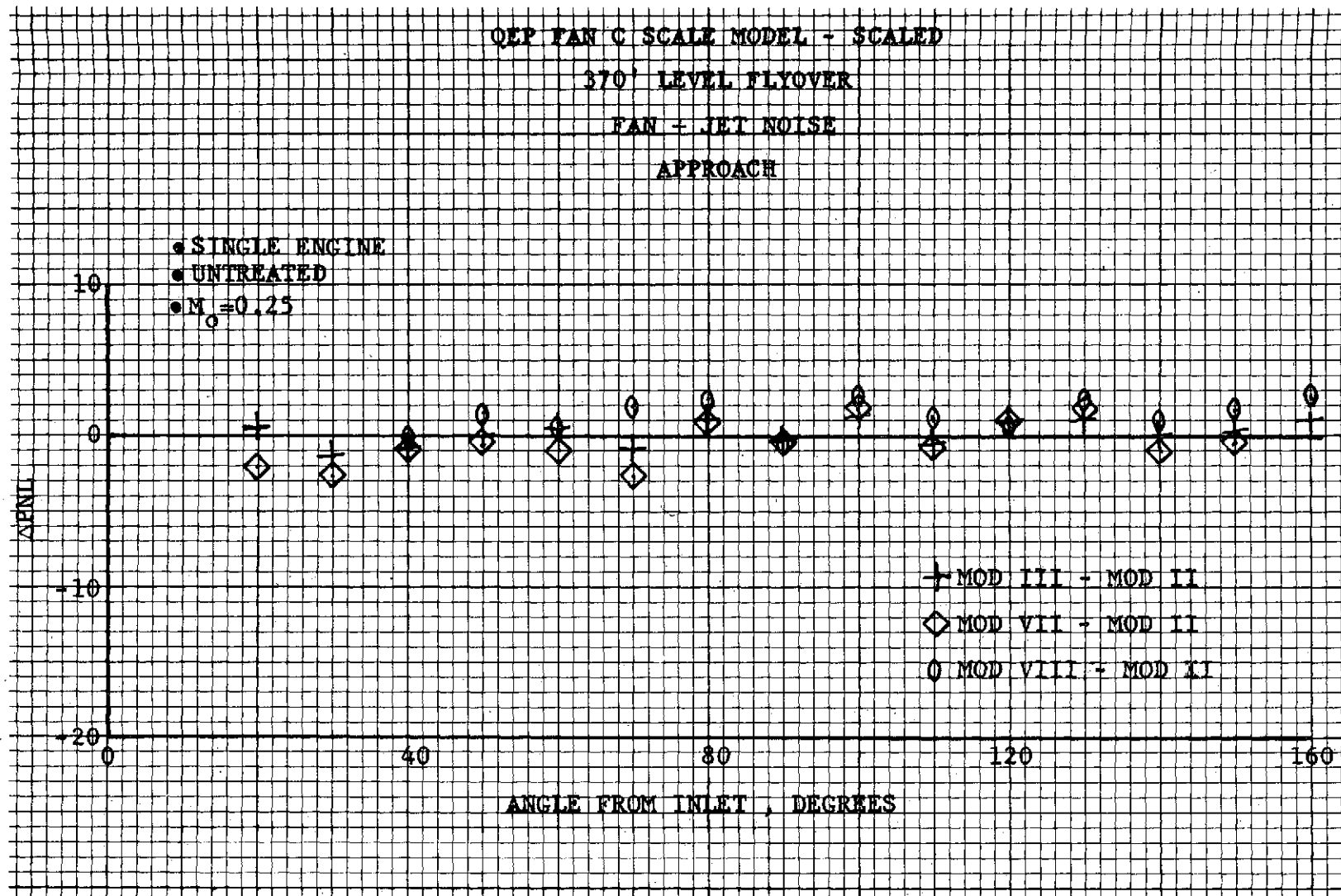


Figure 37. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

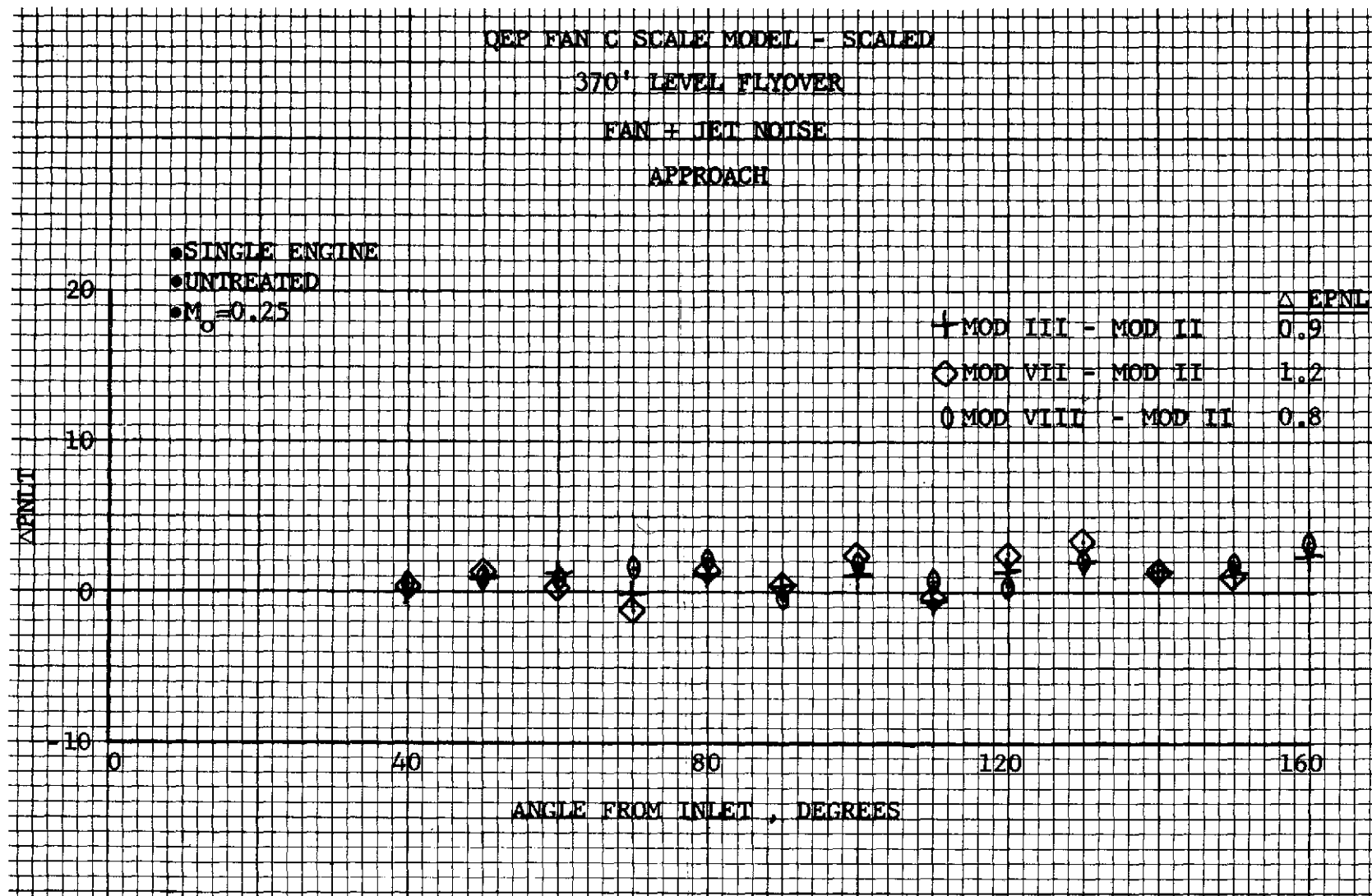


Figure 38. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

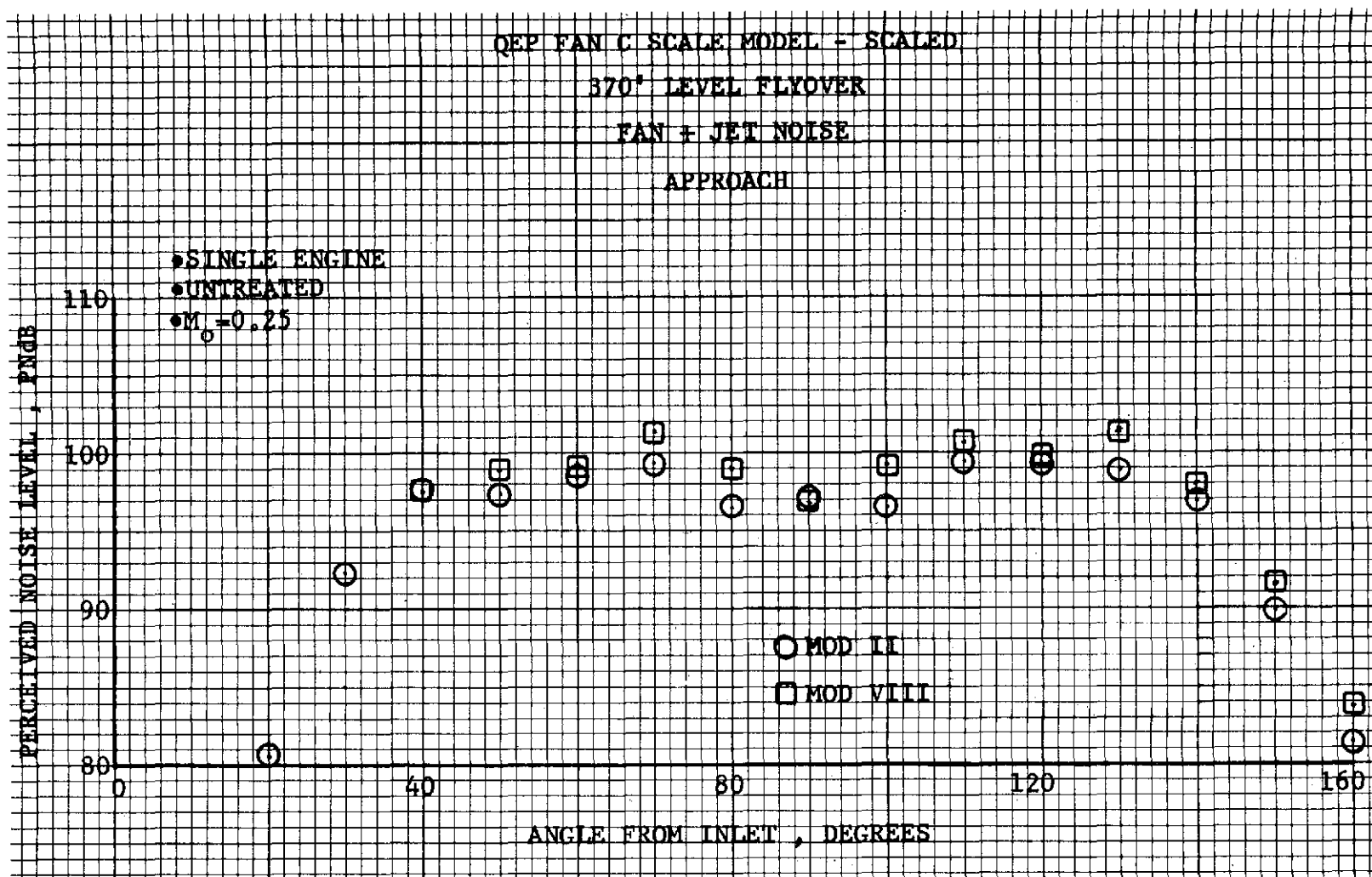


Figure 39. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

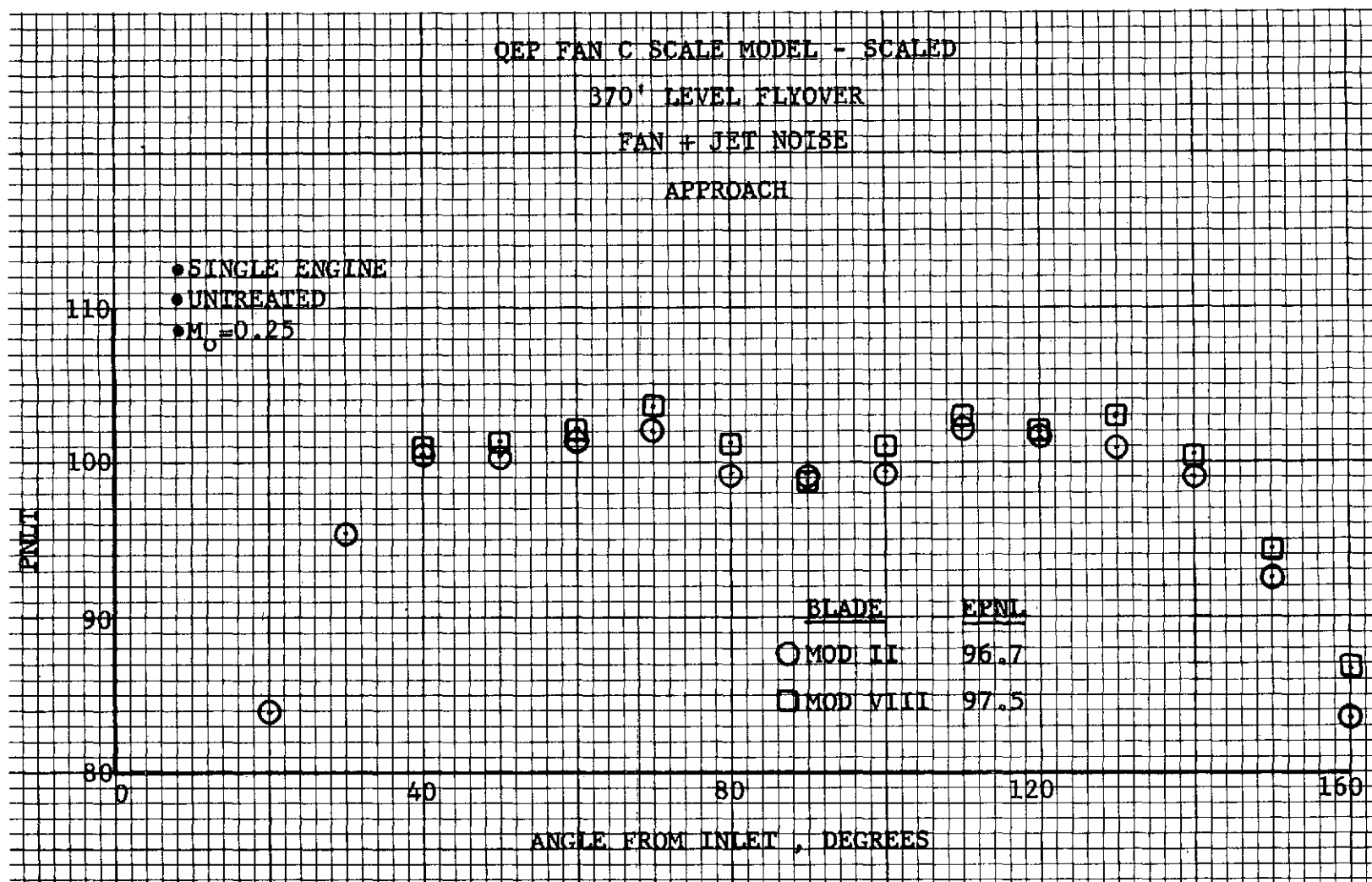


Figure 40. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

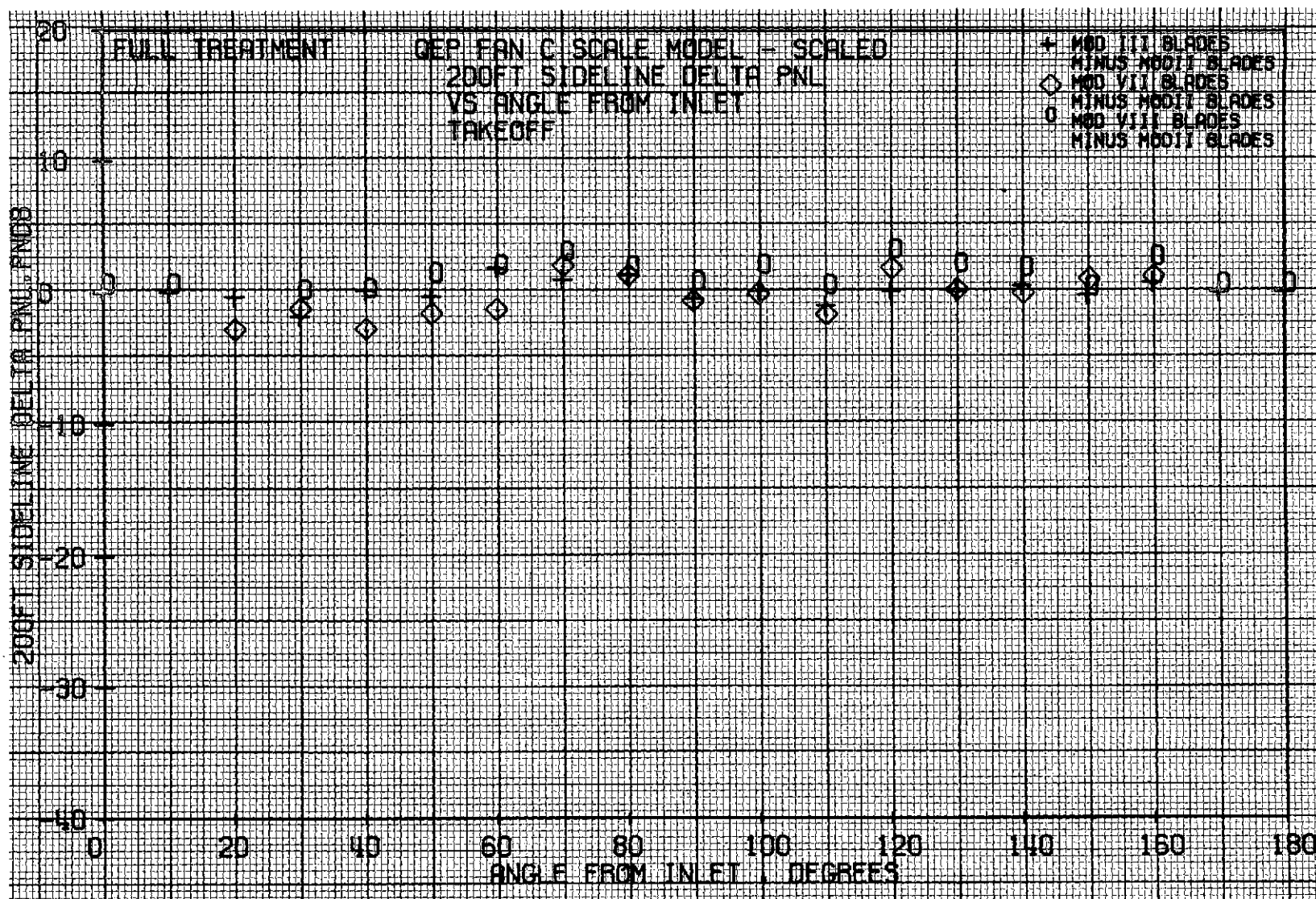


Figure 41. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Takeoff.

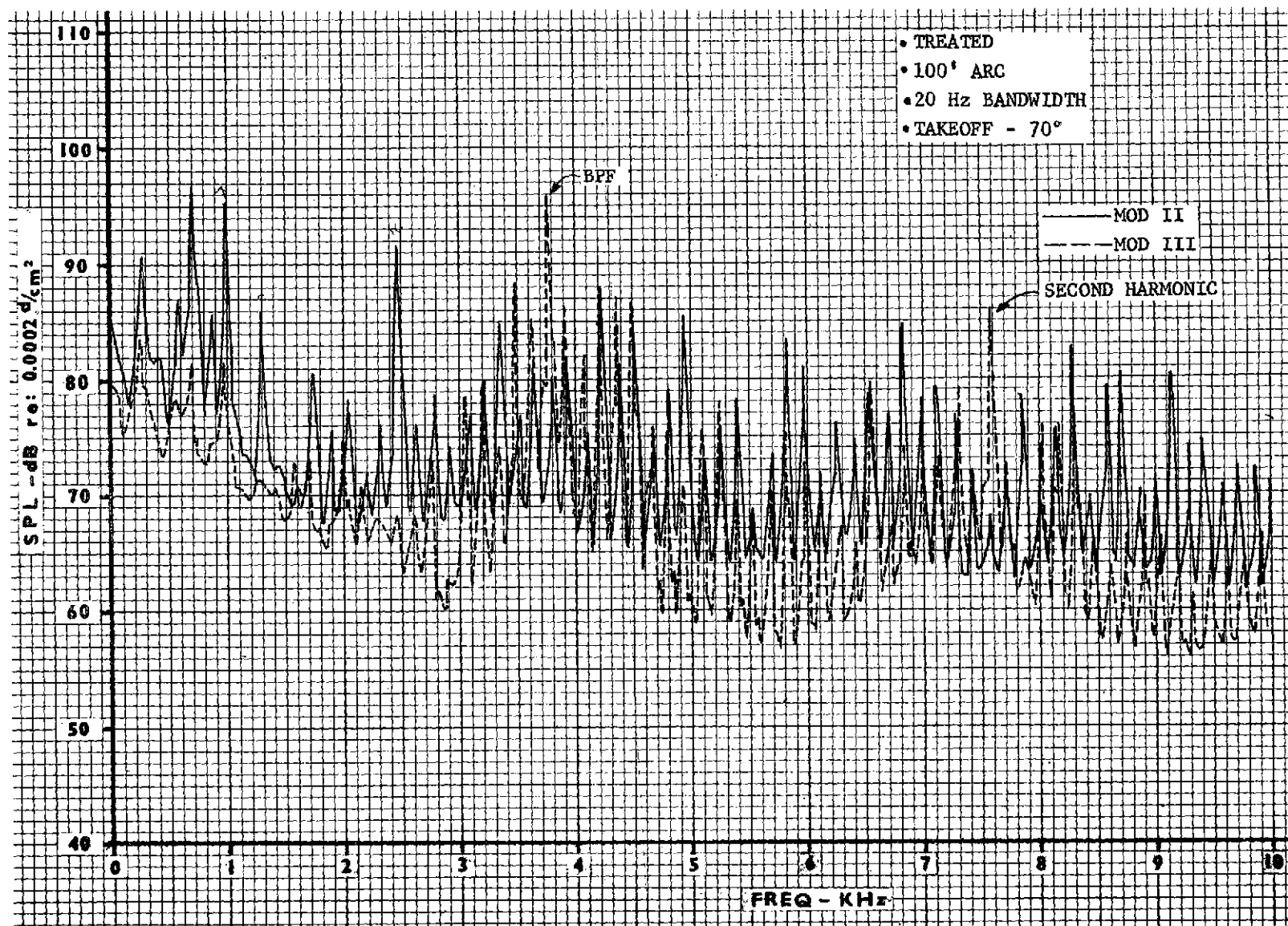


Figure 42. Fan C Scale Model, Mod II and Mod III.

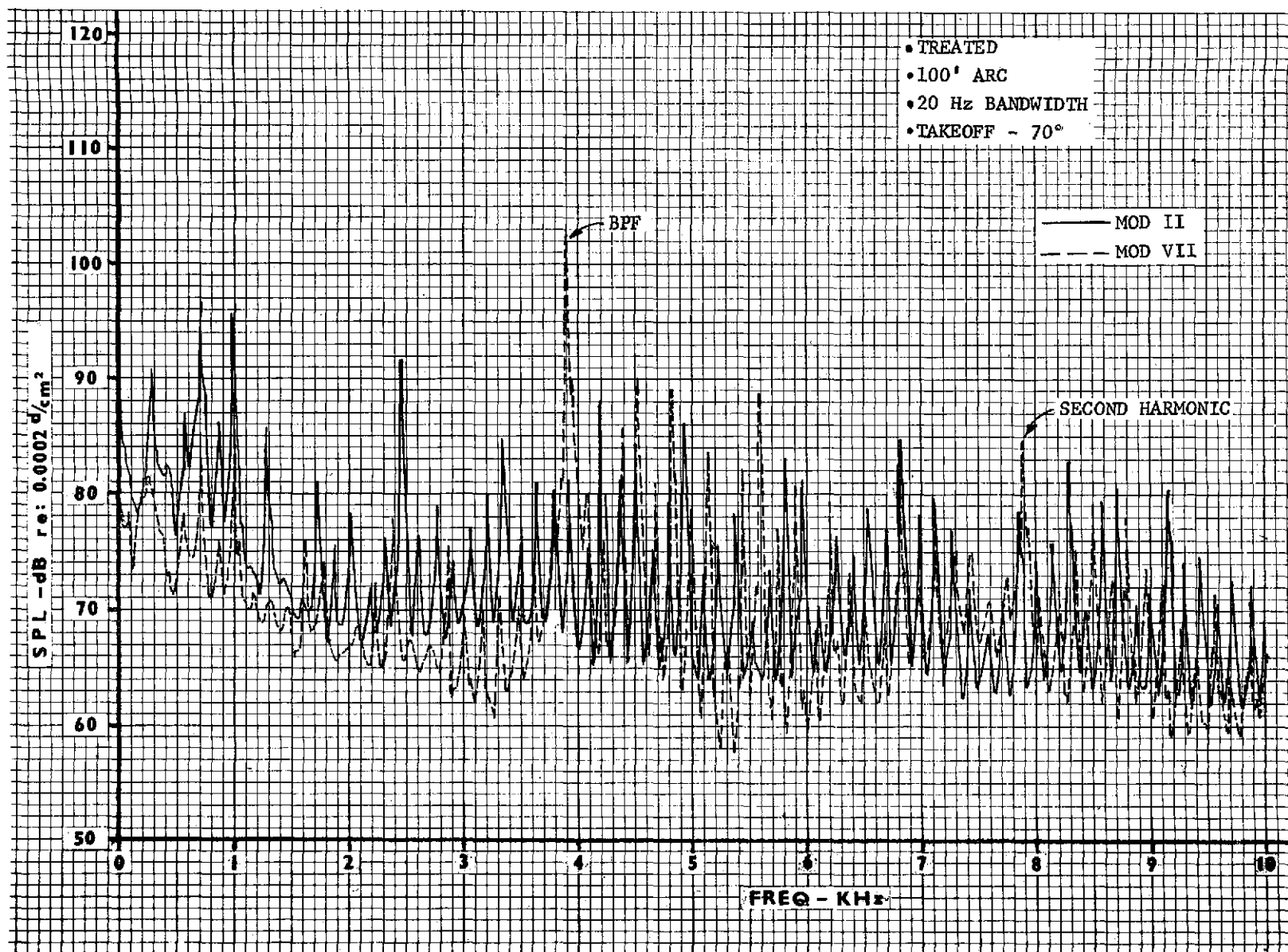


Figure 43. Fan C Scale Model, Mod II and Mod VII.

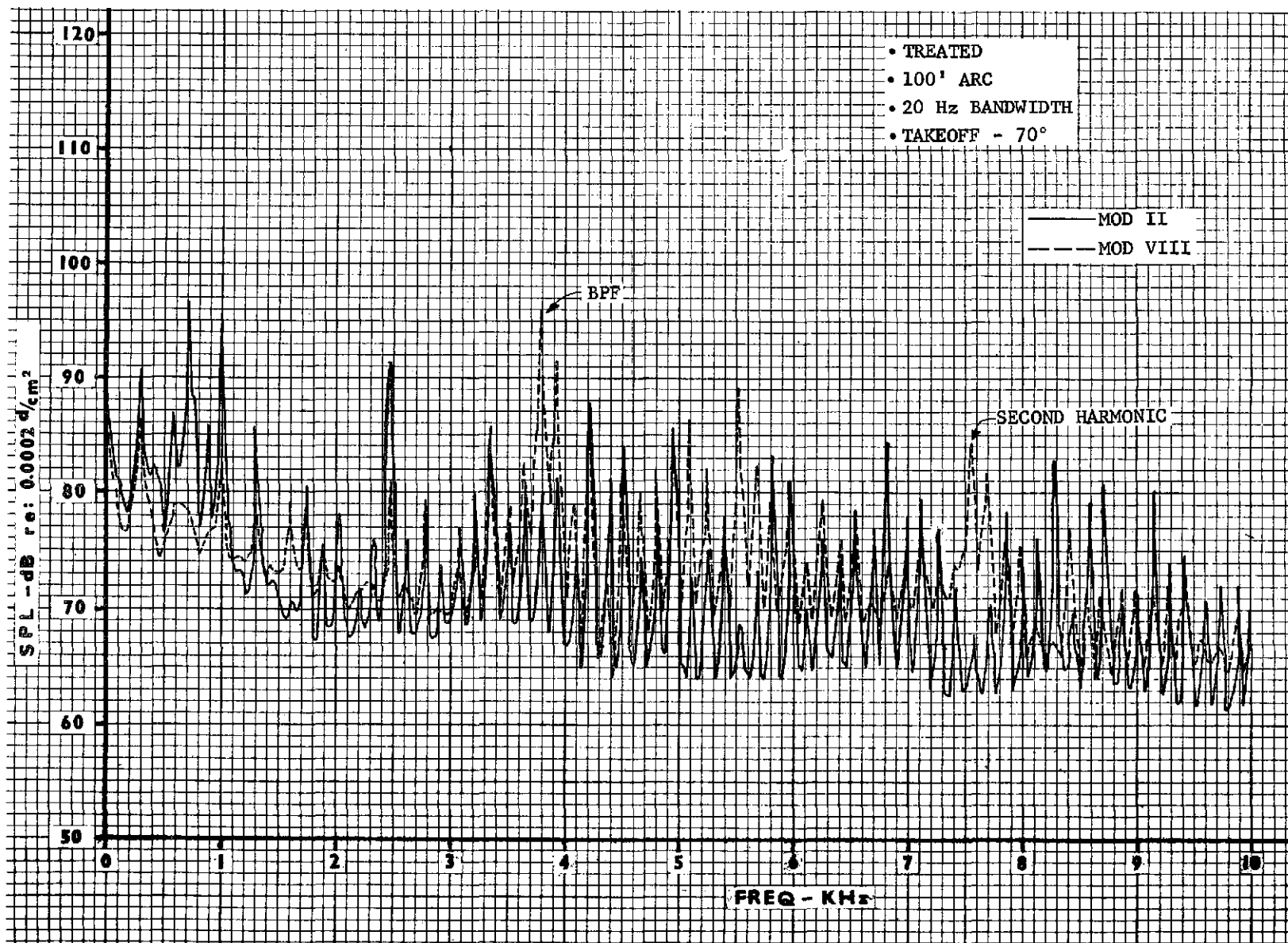


Figure 44. Fan C Scale Model, Mod II and Mod VIII.

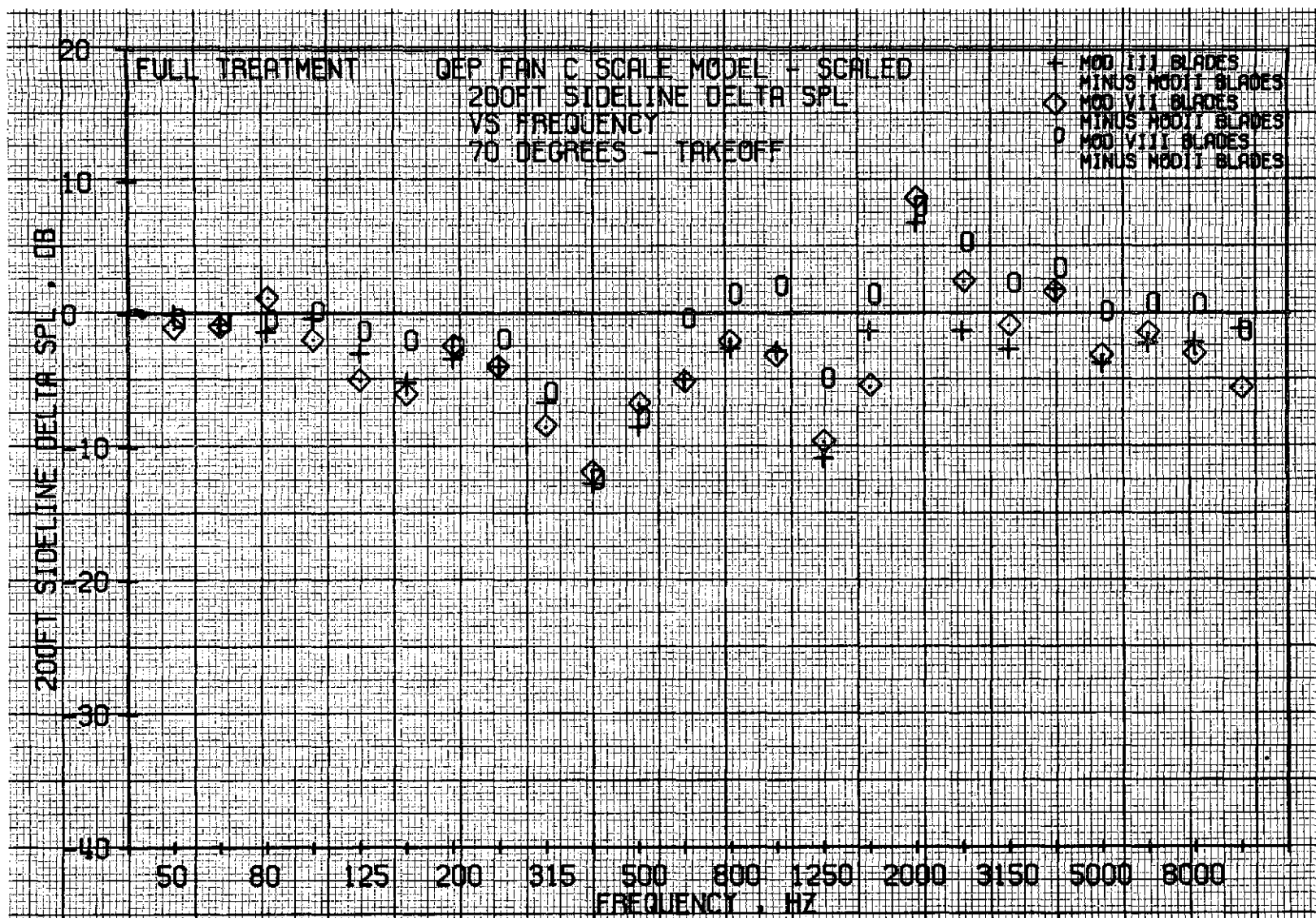


Figure 45. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 70°, Takeoff.

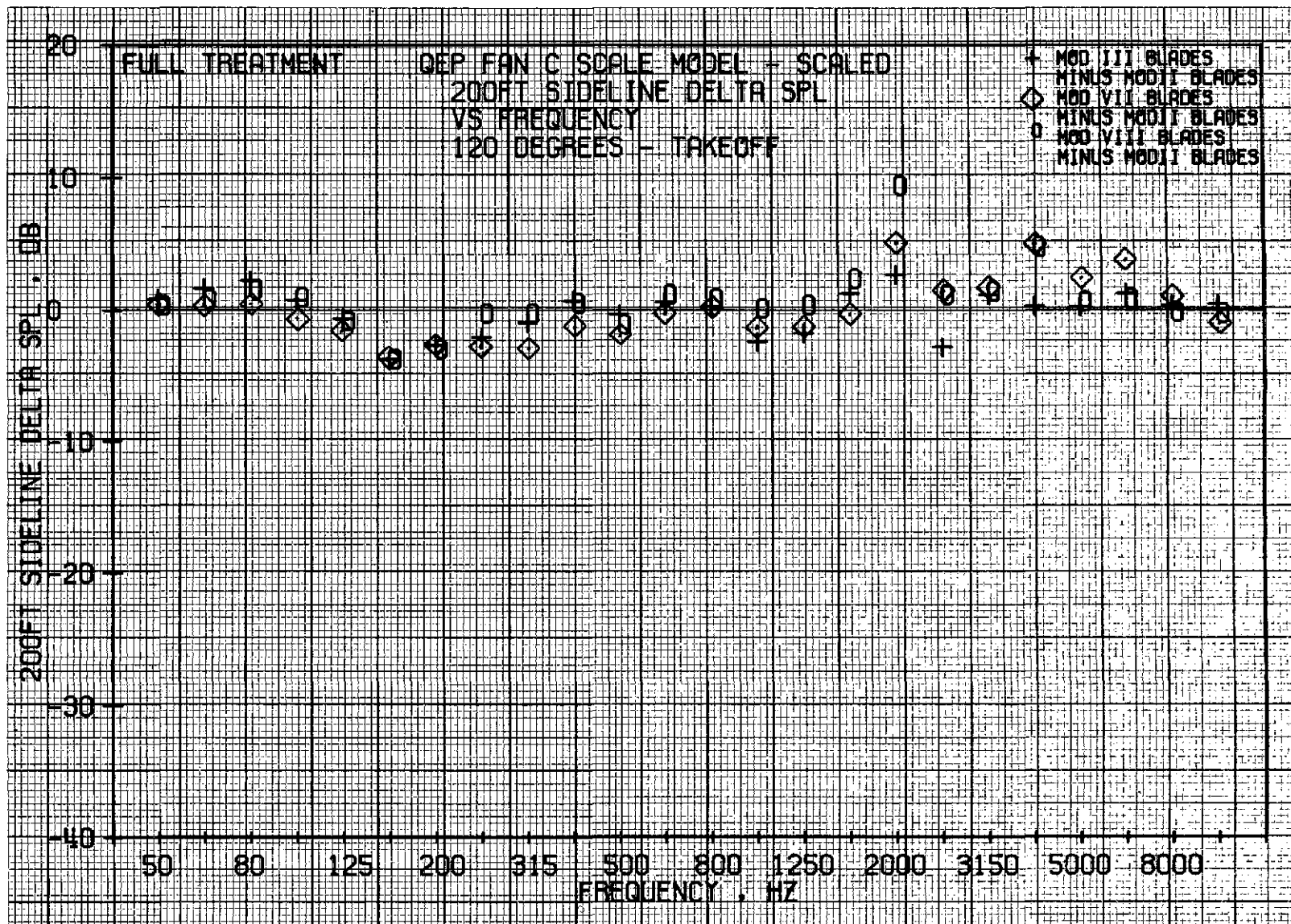


Figure 46. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 120°, Takeoff.

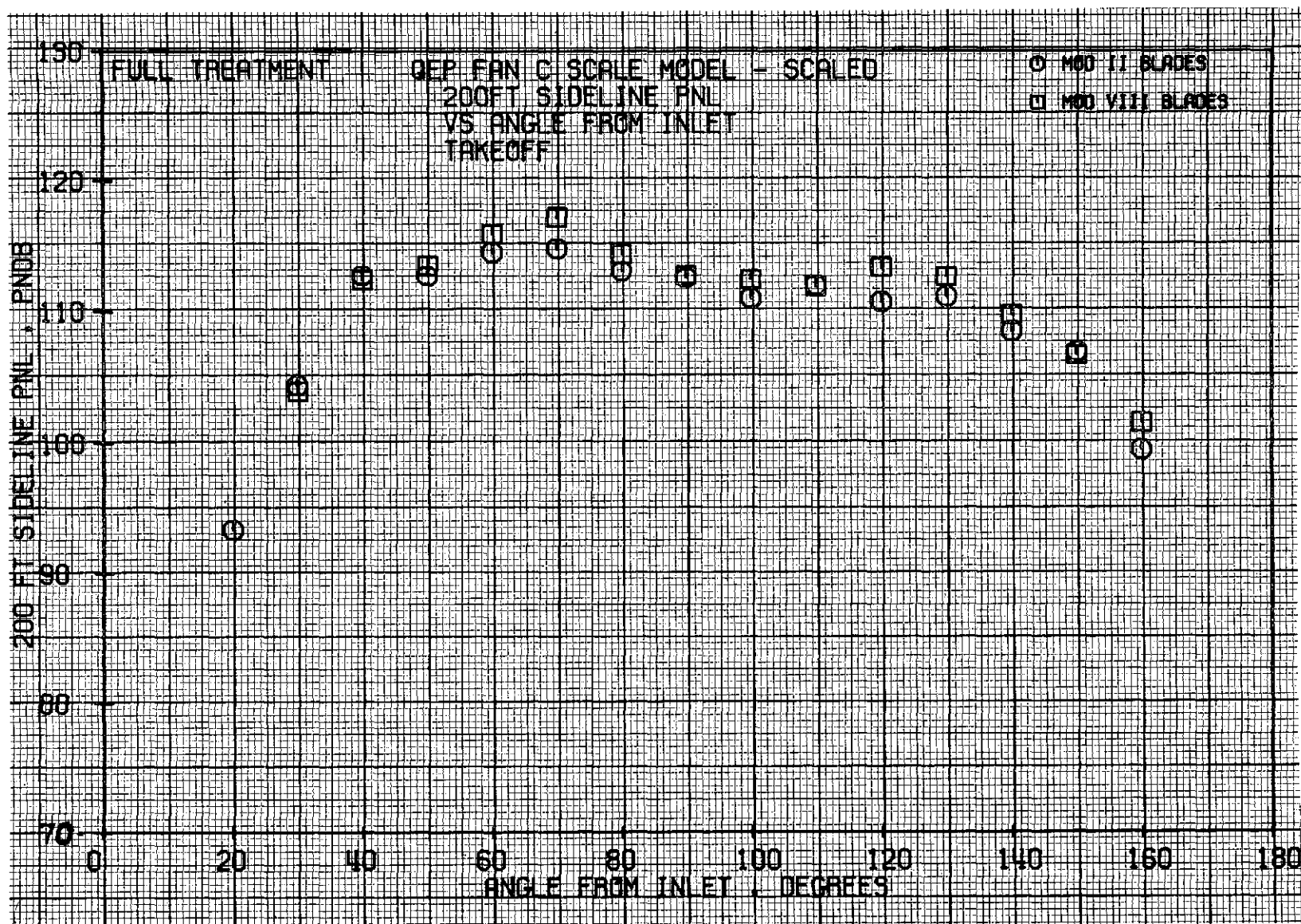


Figure 47. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Takeoff.

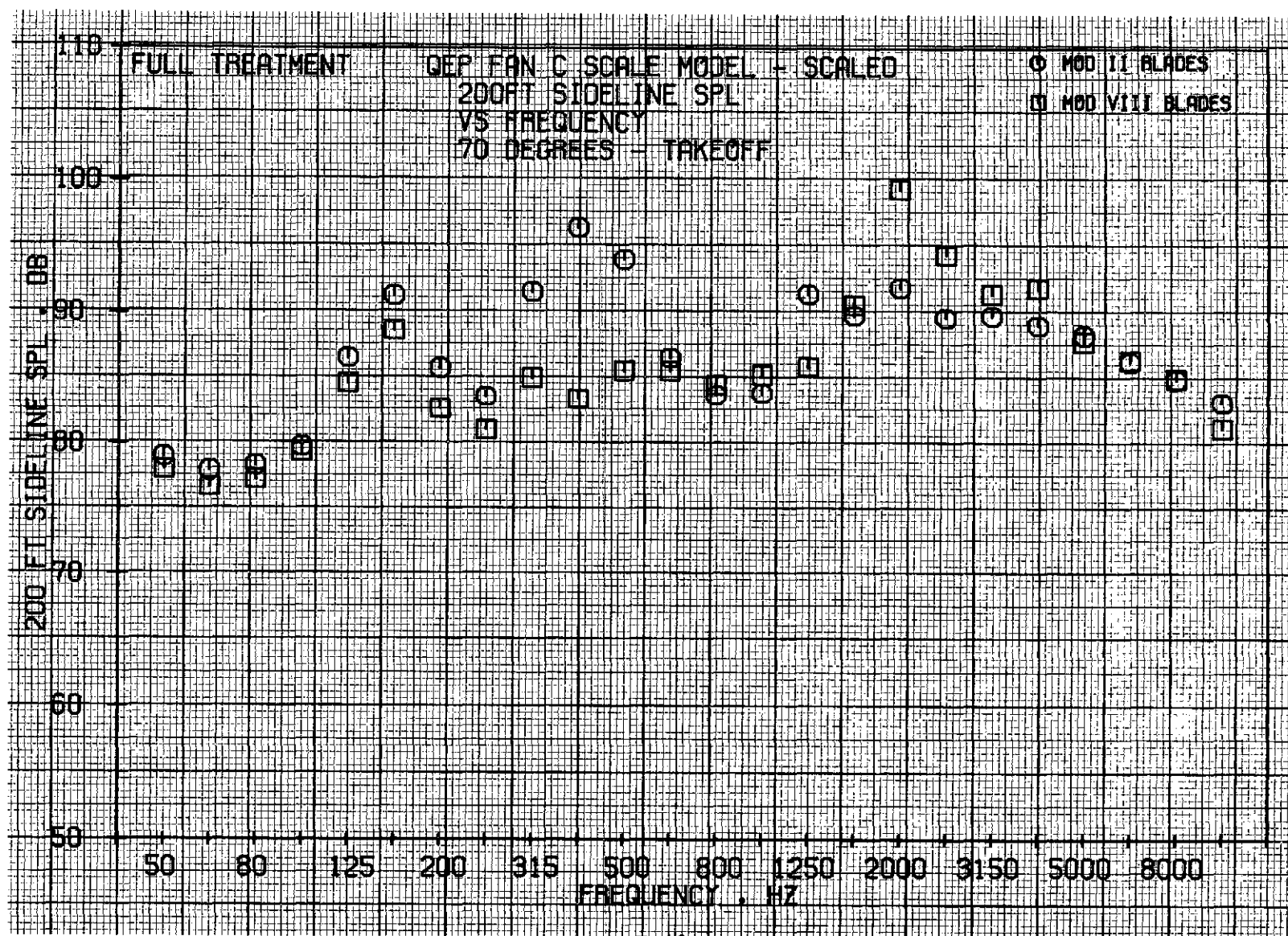


Figure 48. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 70°, Takeoff.

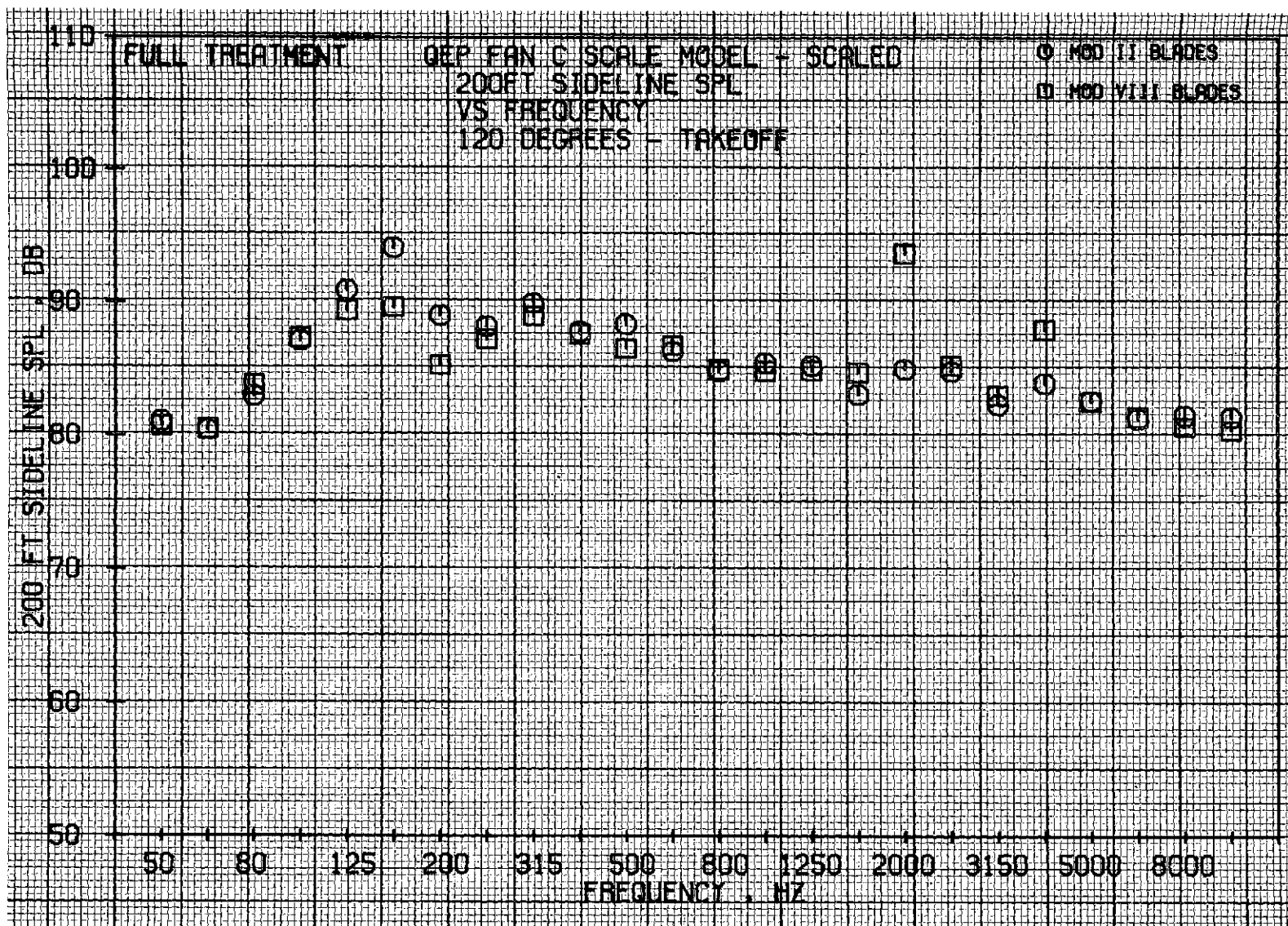


Figure 49. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 120°, Takeoff.

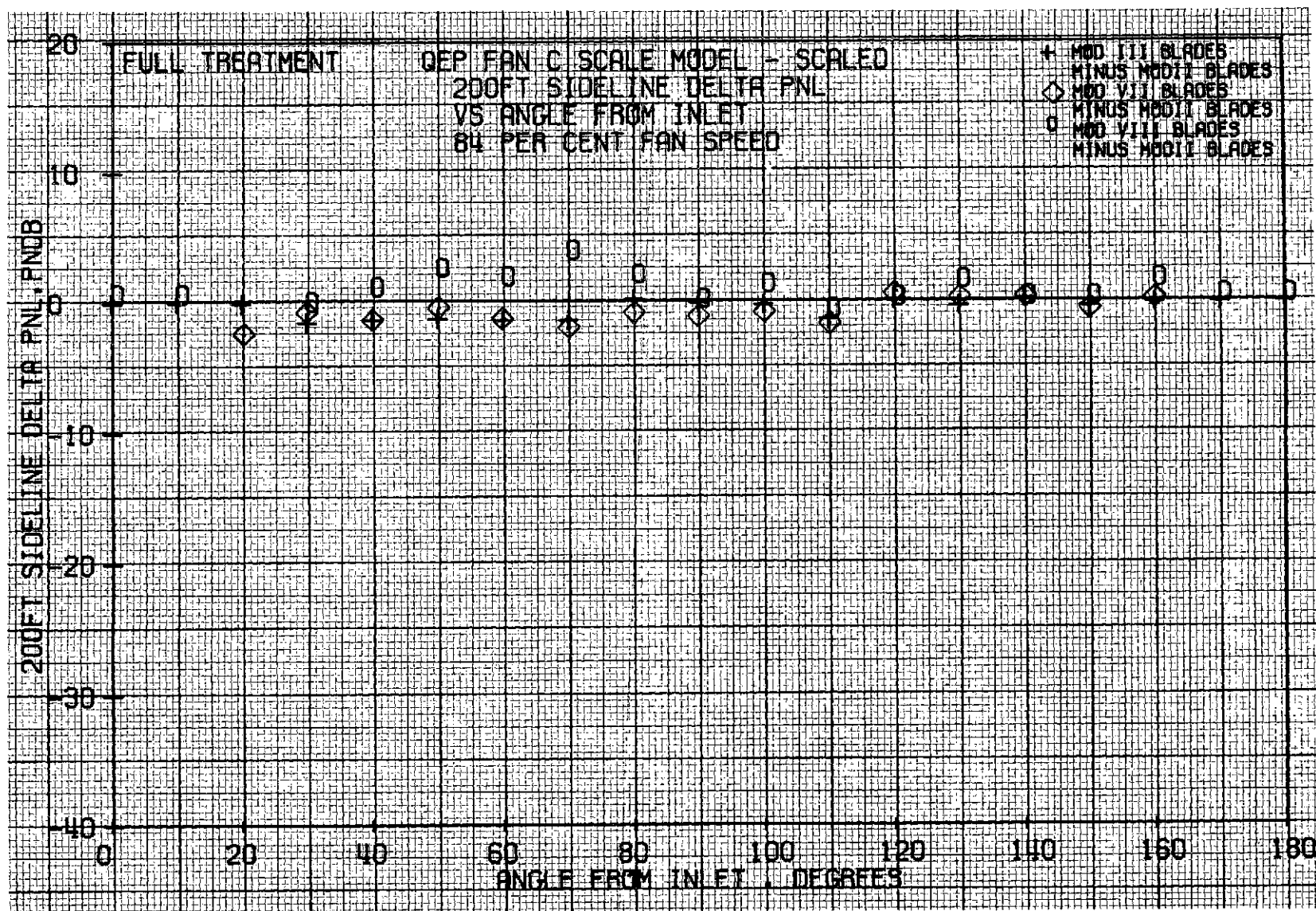


Figure 50. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 84% Fan Speed.

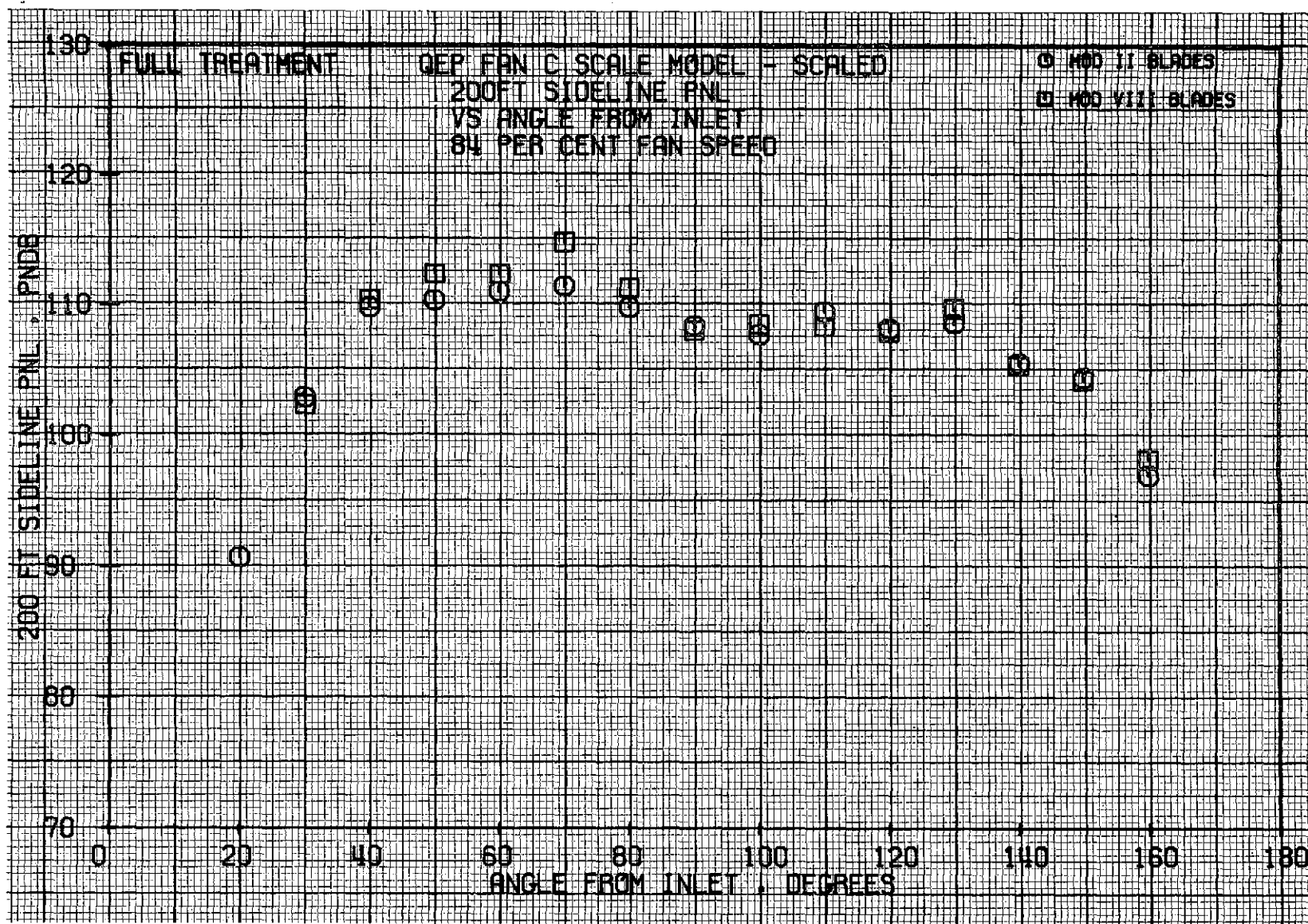


Figure 51. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 84% Fan Speed.

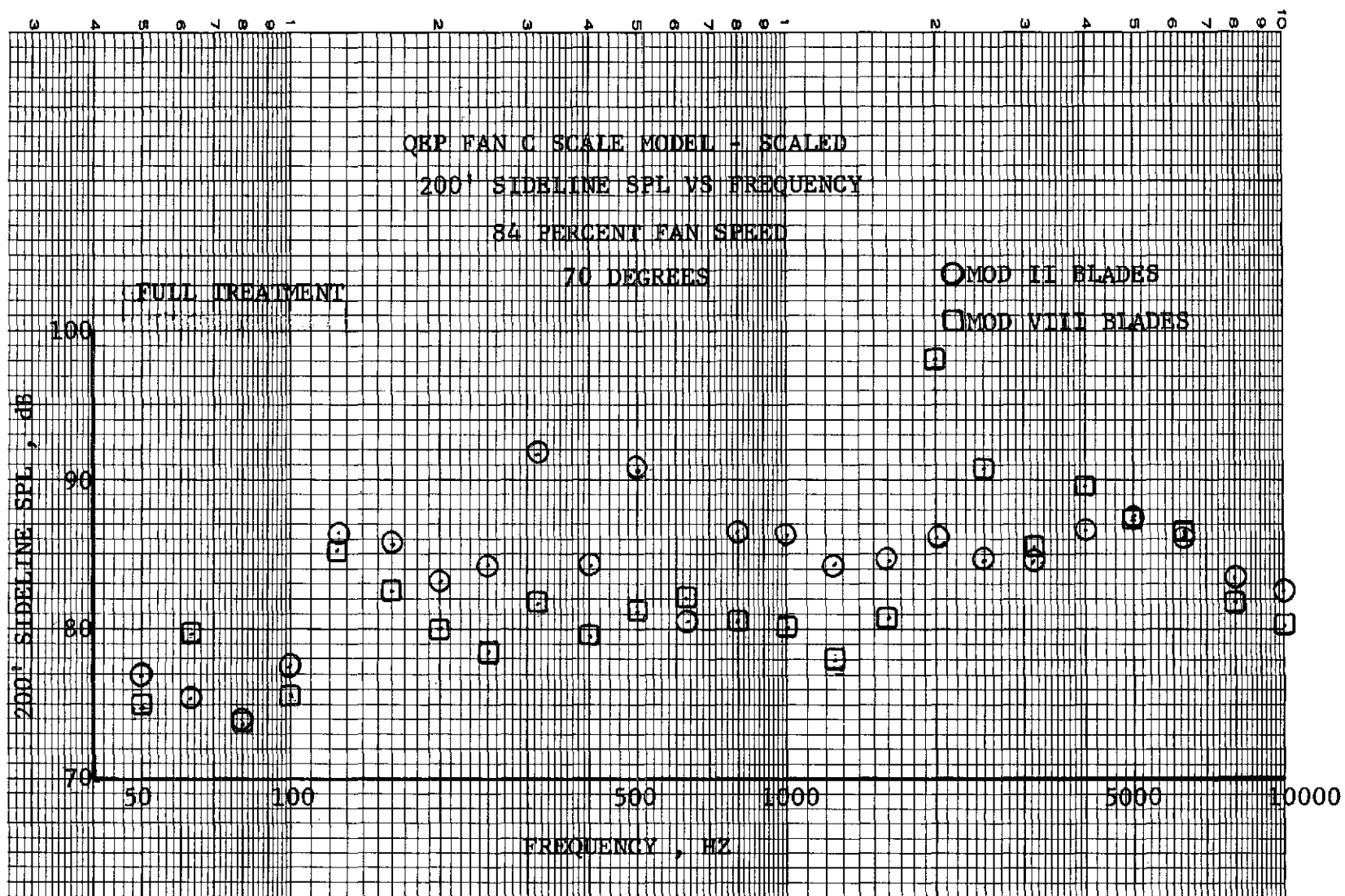


Figure 52. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 84% Fan Speed, 70°.

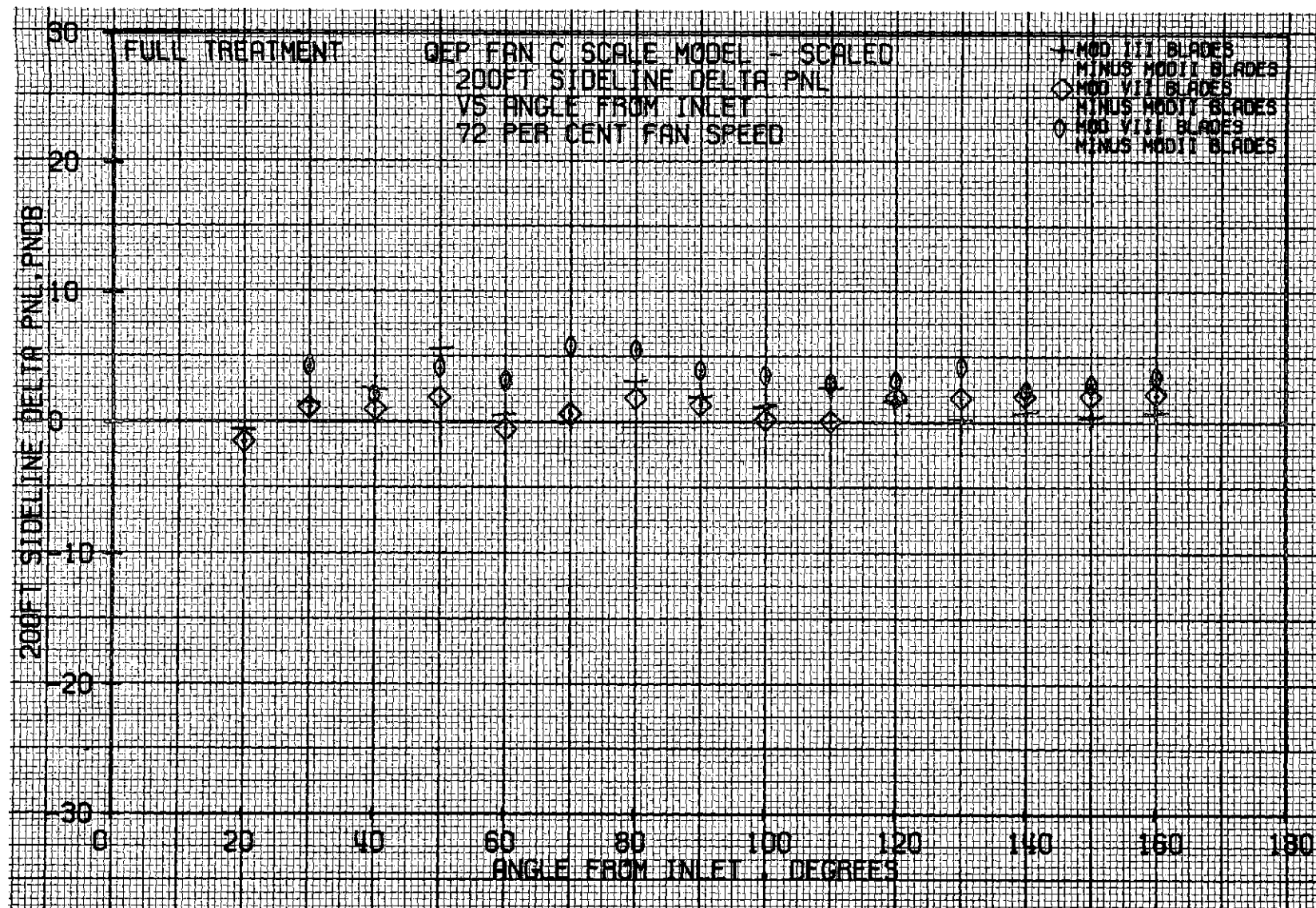


Figure 53. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, 72% Fan Speed.

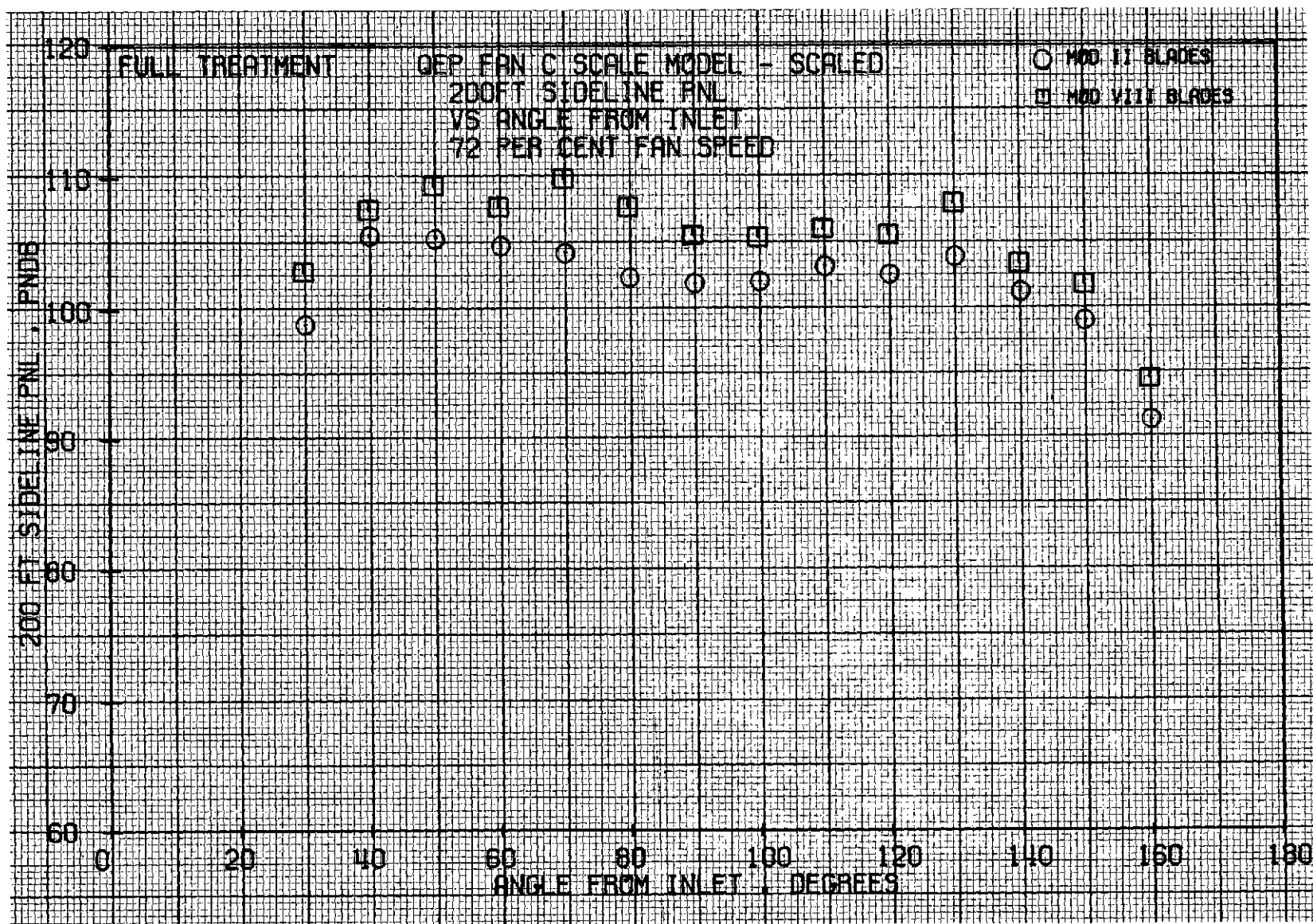


Figure 54. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, 72% Fan Speed.

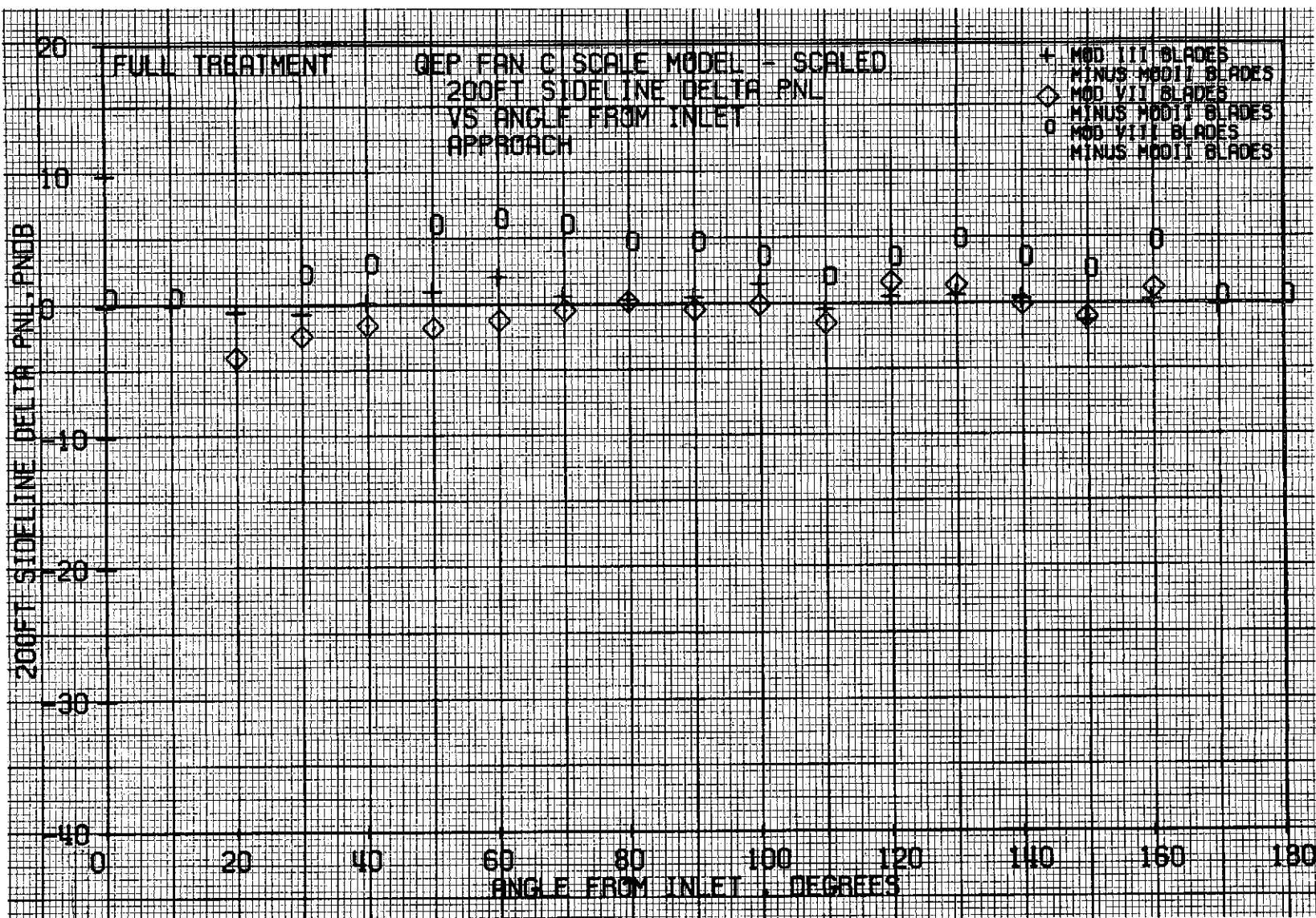


Figure 55. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta PNL Vs. Angle from Inlet, Approach.

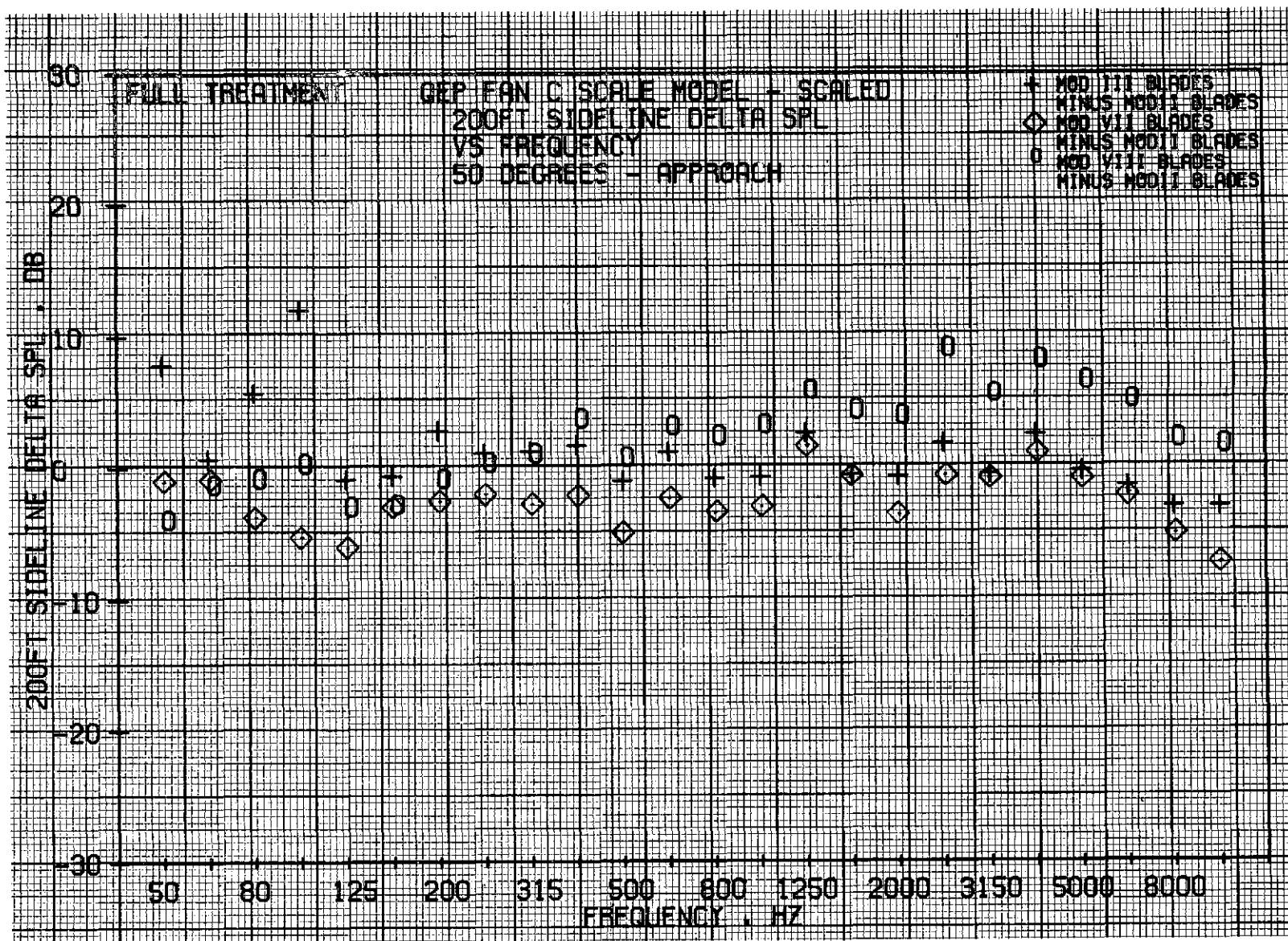


Figure 56. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 50°, Approach.

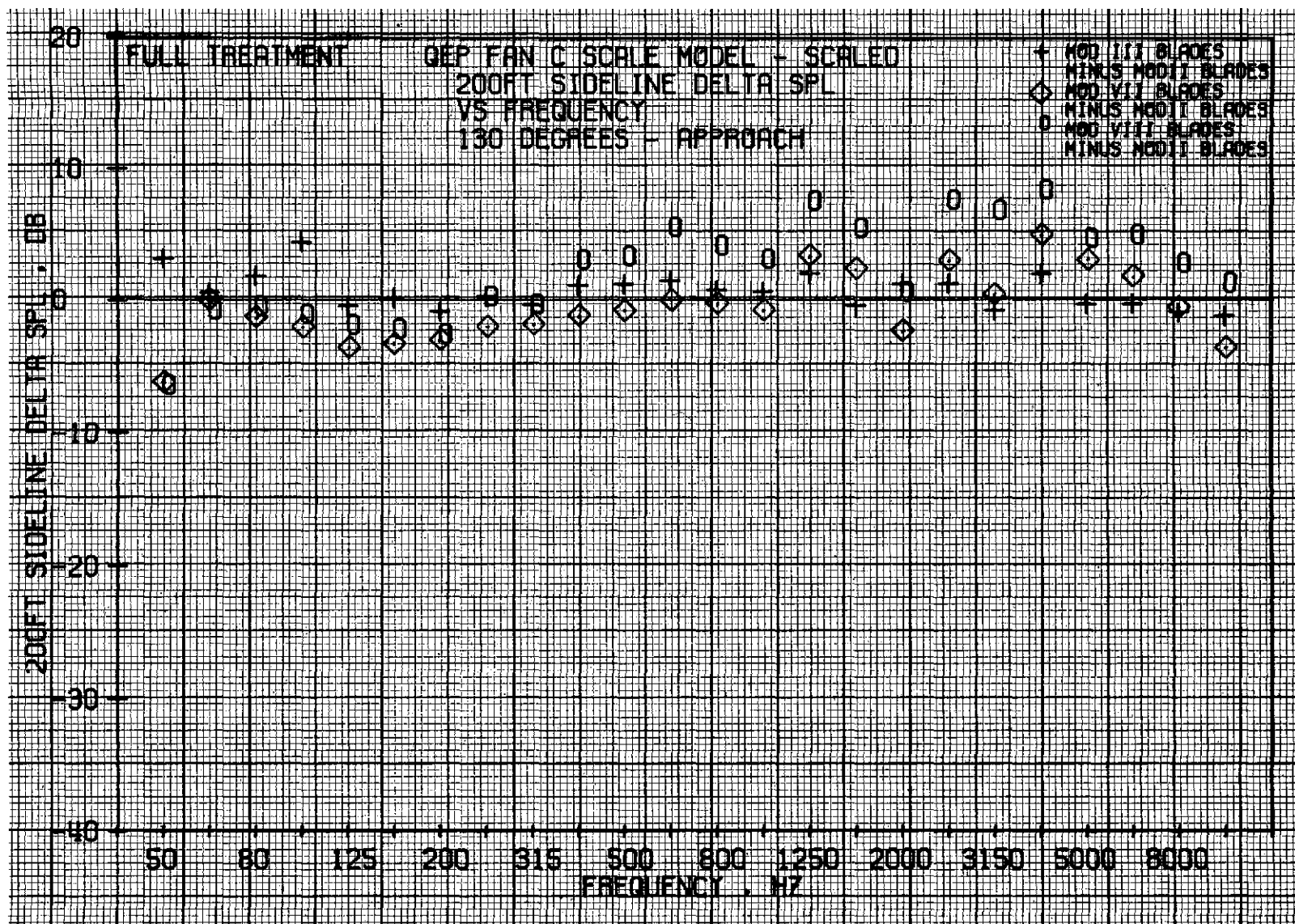


Figure 57. QEP Fan C Scale Model, Scaled 200-Foot Sideline Delta SPL Vs. Frequency, 130°, Approach.

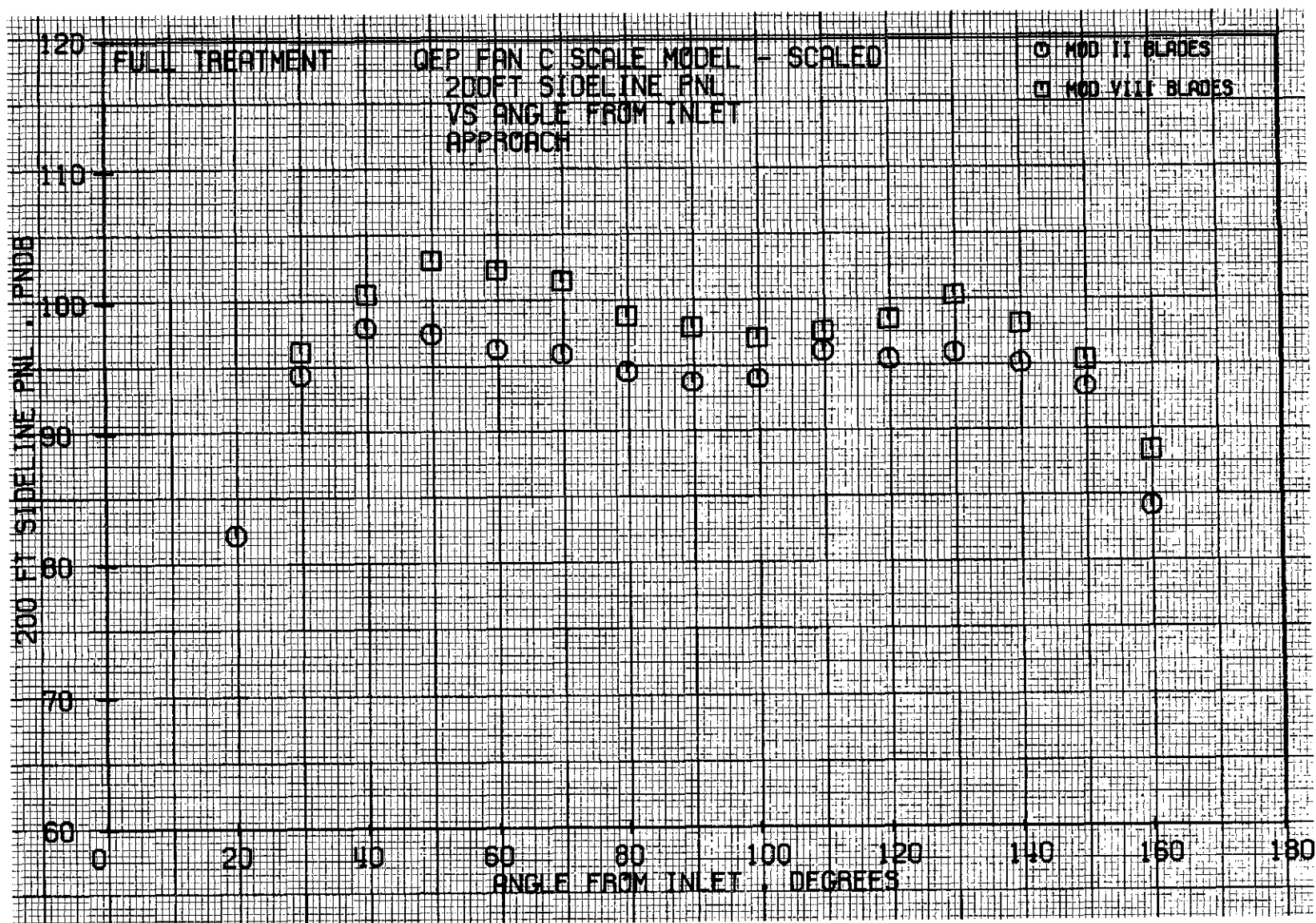


Figure 58. QEP Fan C Scale Model, Scaled 200-Foot Sideline PNL Vs. Angle from Inlet, Approach.

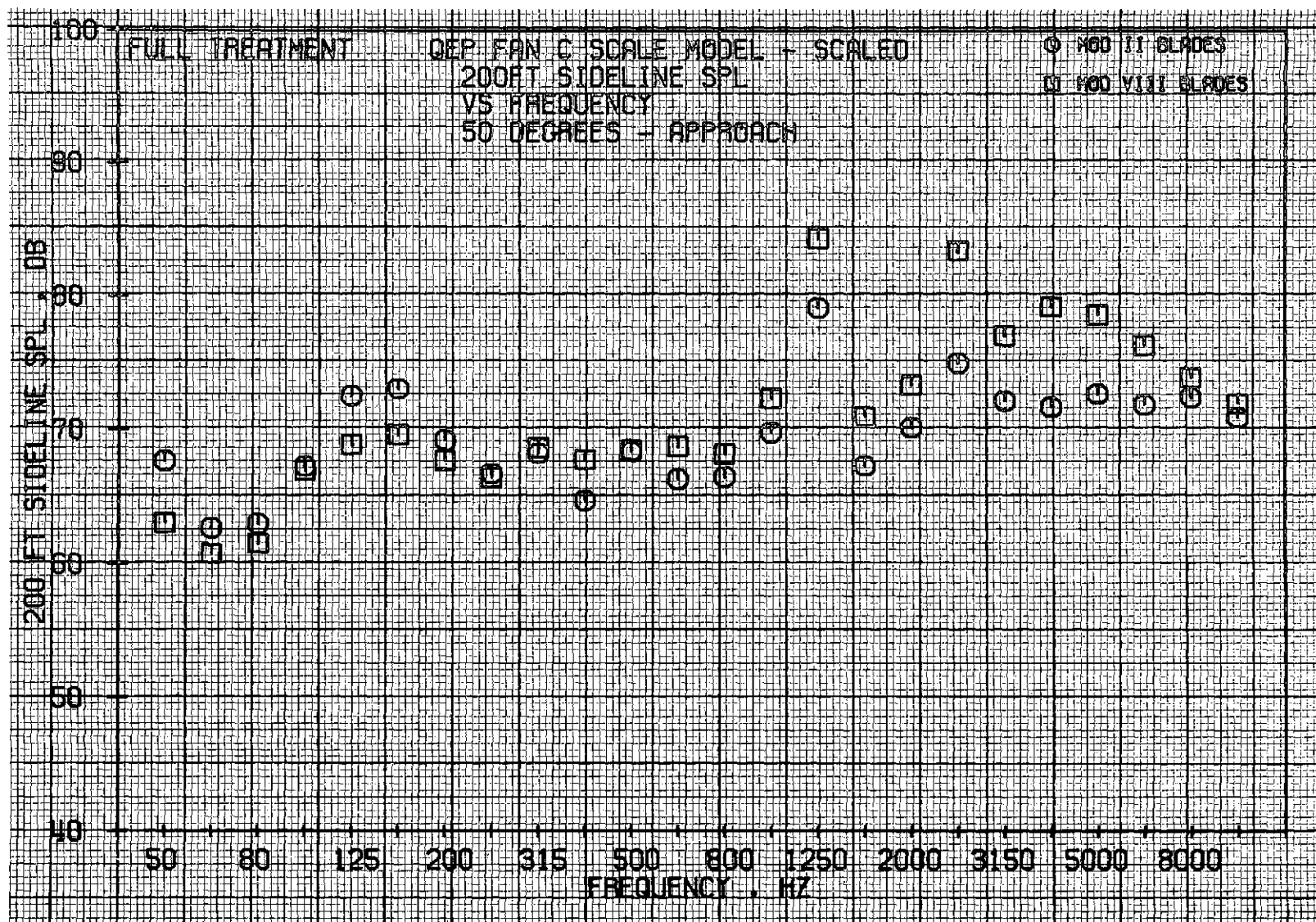


Figure 59. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 50°, Approach.

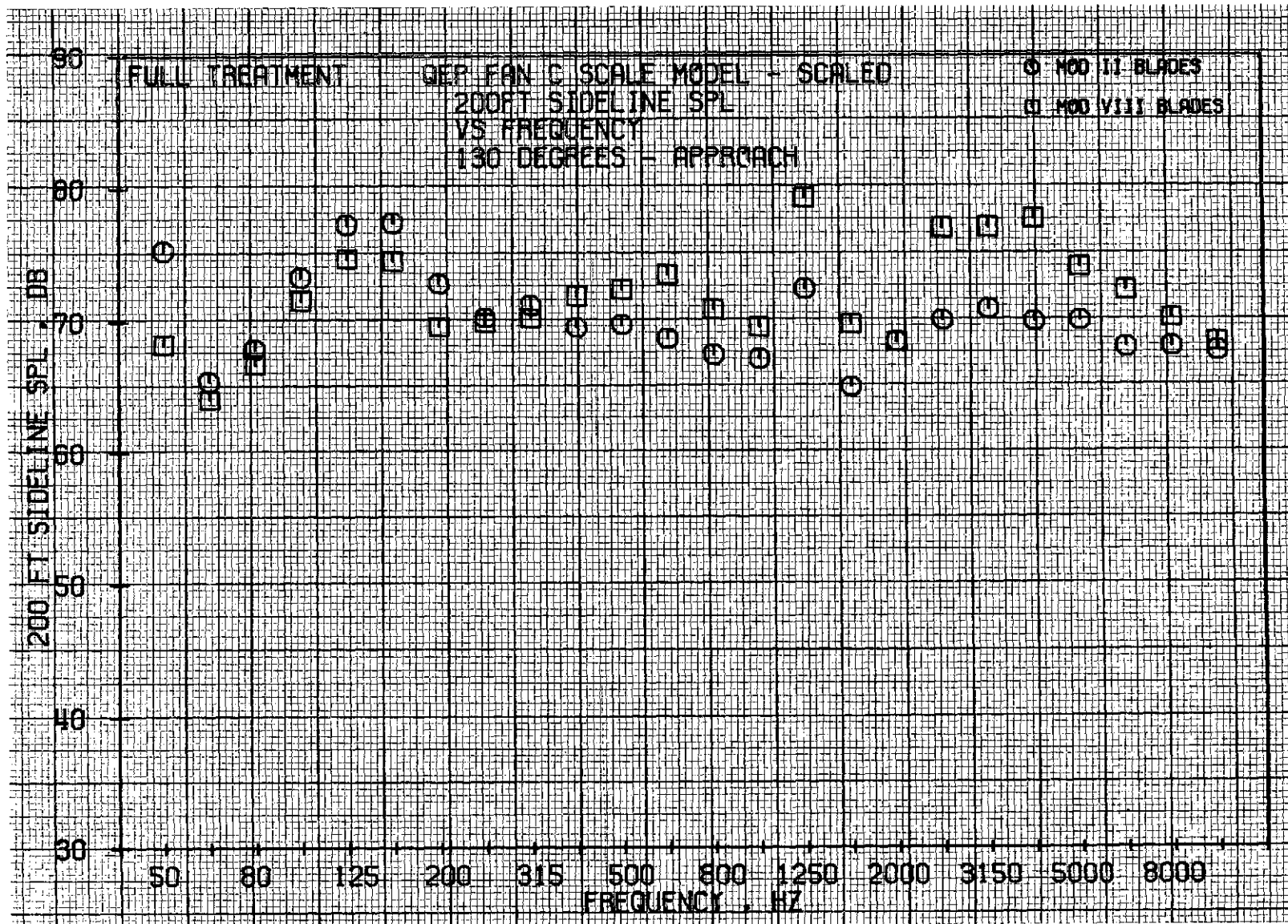


Figure 60. QEP Fan C Scale Model, Scaled 200-Foot Sideline SPL Vs. Frequency, 130°, Approach.

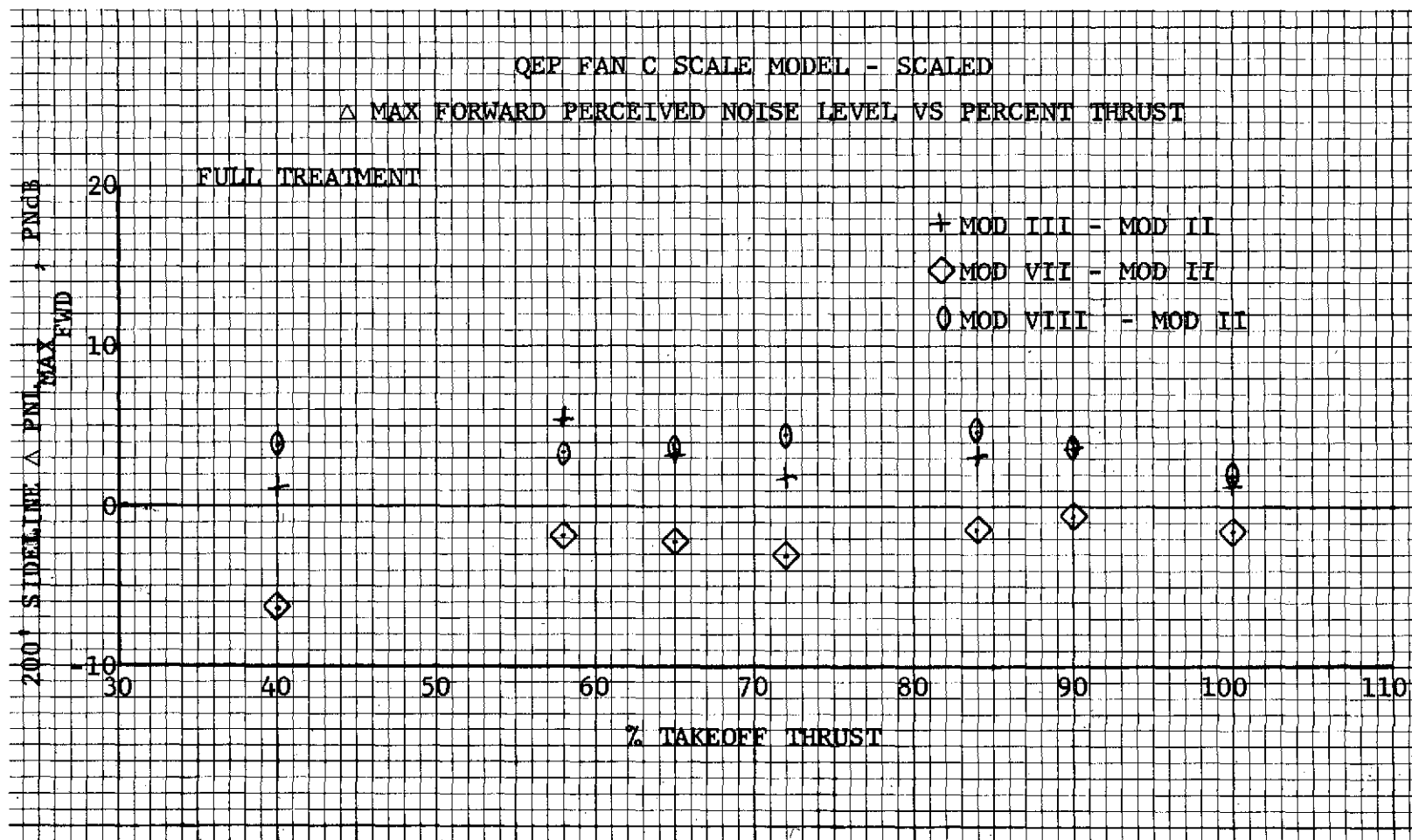


Figure 61. QEP Fan C Scale Model, Scaled Δ_{Max} , Forward-Perceived Noise Level Vs. Percent Thrust.

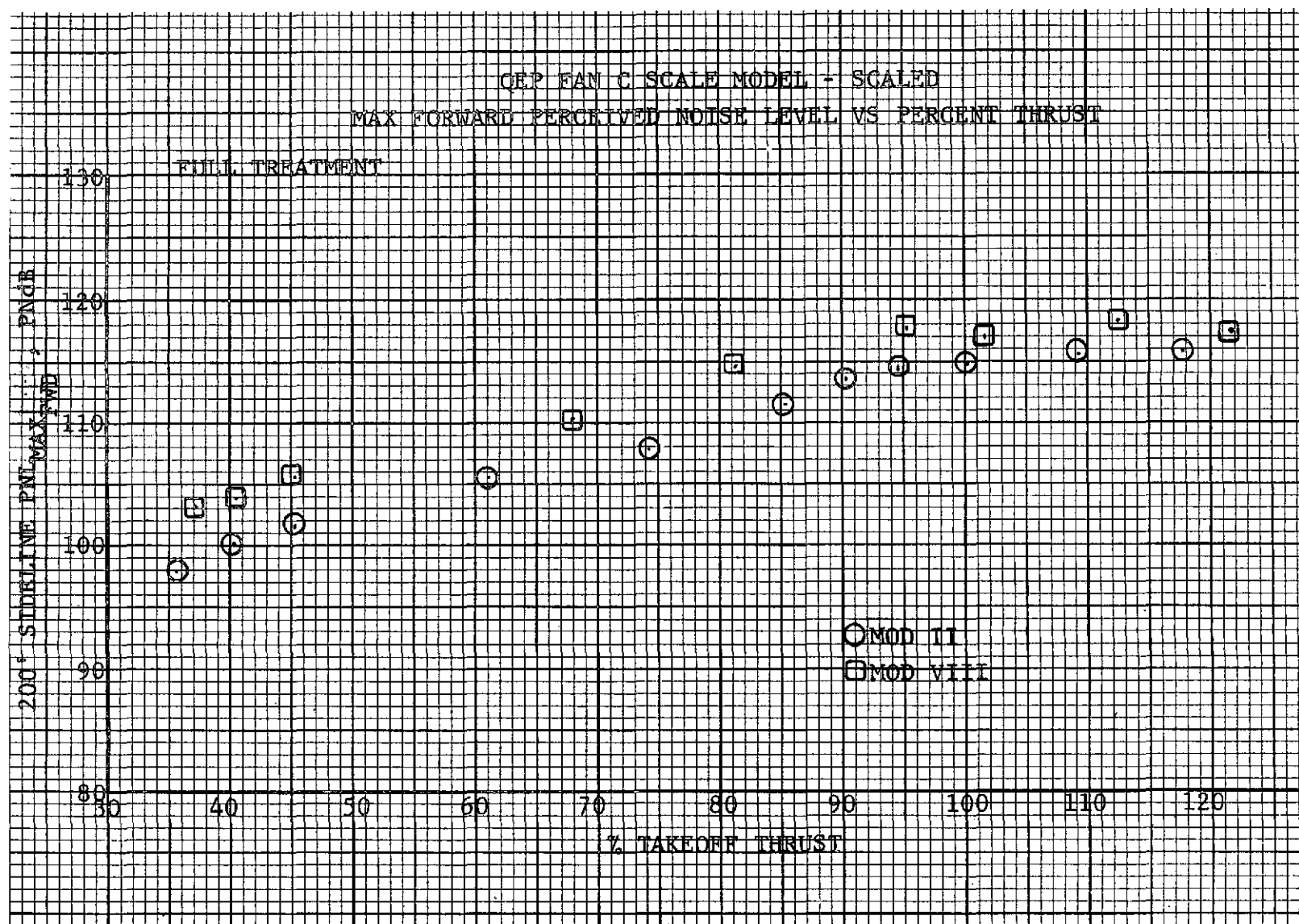


Figure 62. QEP Fan C Scale Model, Scaled Max. Forward-Perceived Noise Level Vs. Percent Thrust.

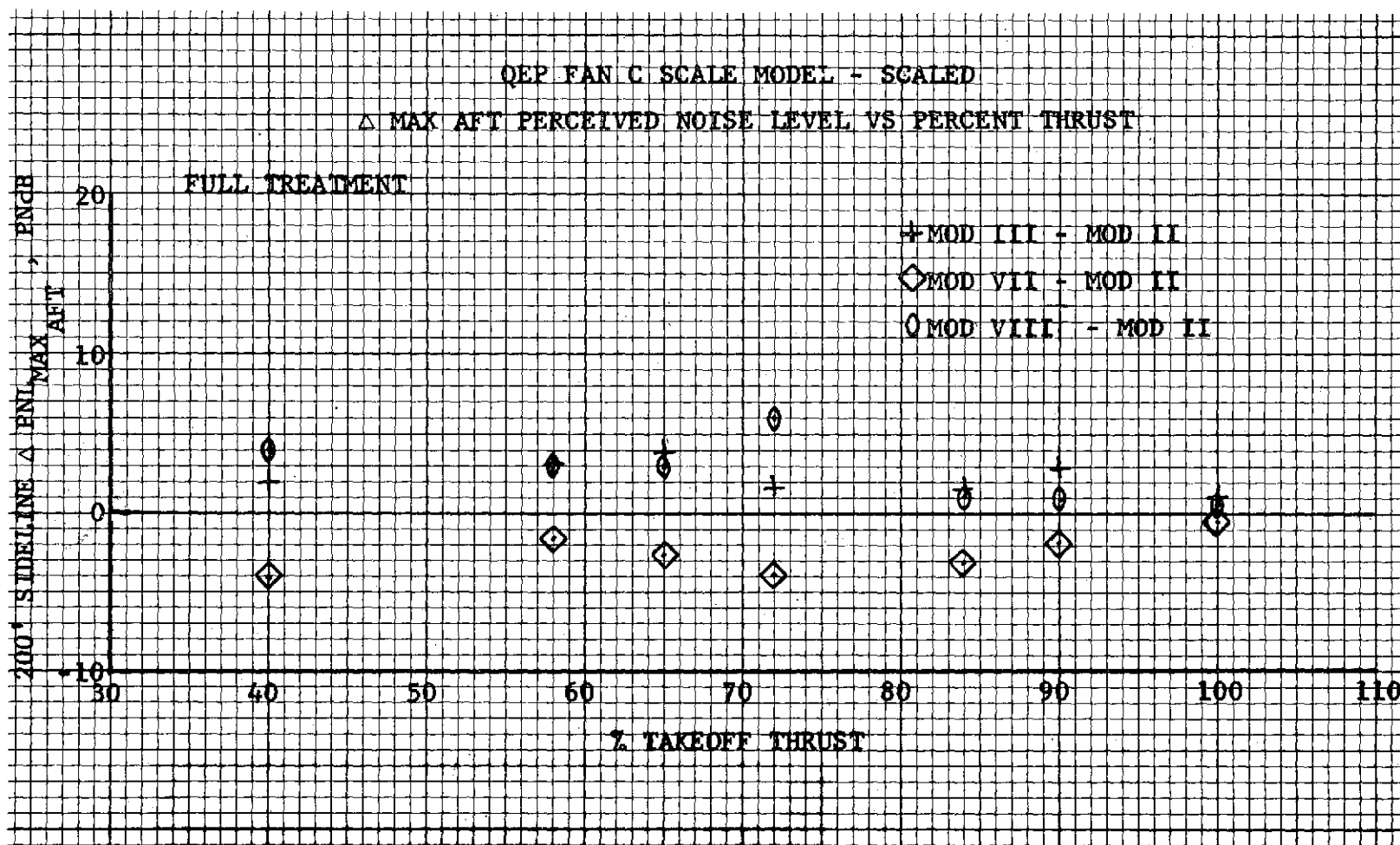


Figure 63. QEP Fan C Scale Model, Scaled Δ_{Max} , Aft-Perceived Noise Level Vs. Percent Thrust.

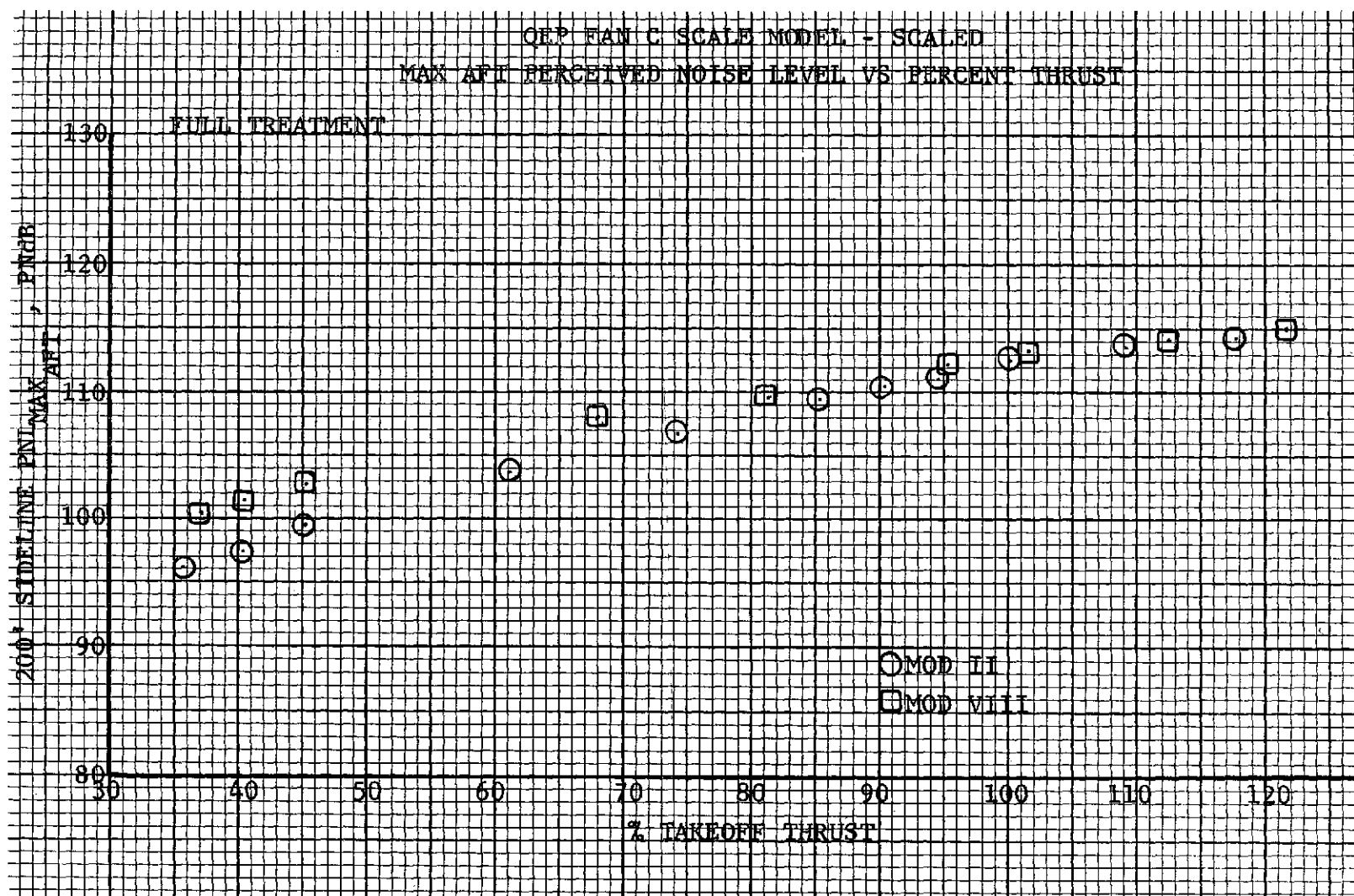


Figure 64. QEP Fan C Scale Model, Scaled Maximum Aft-Perceived Noise Level Vs. Percent Thrust.

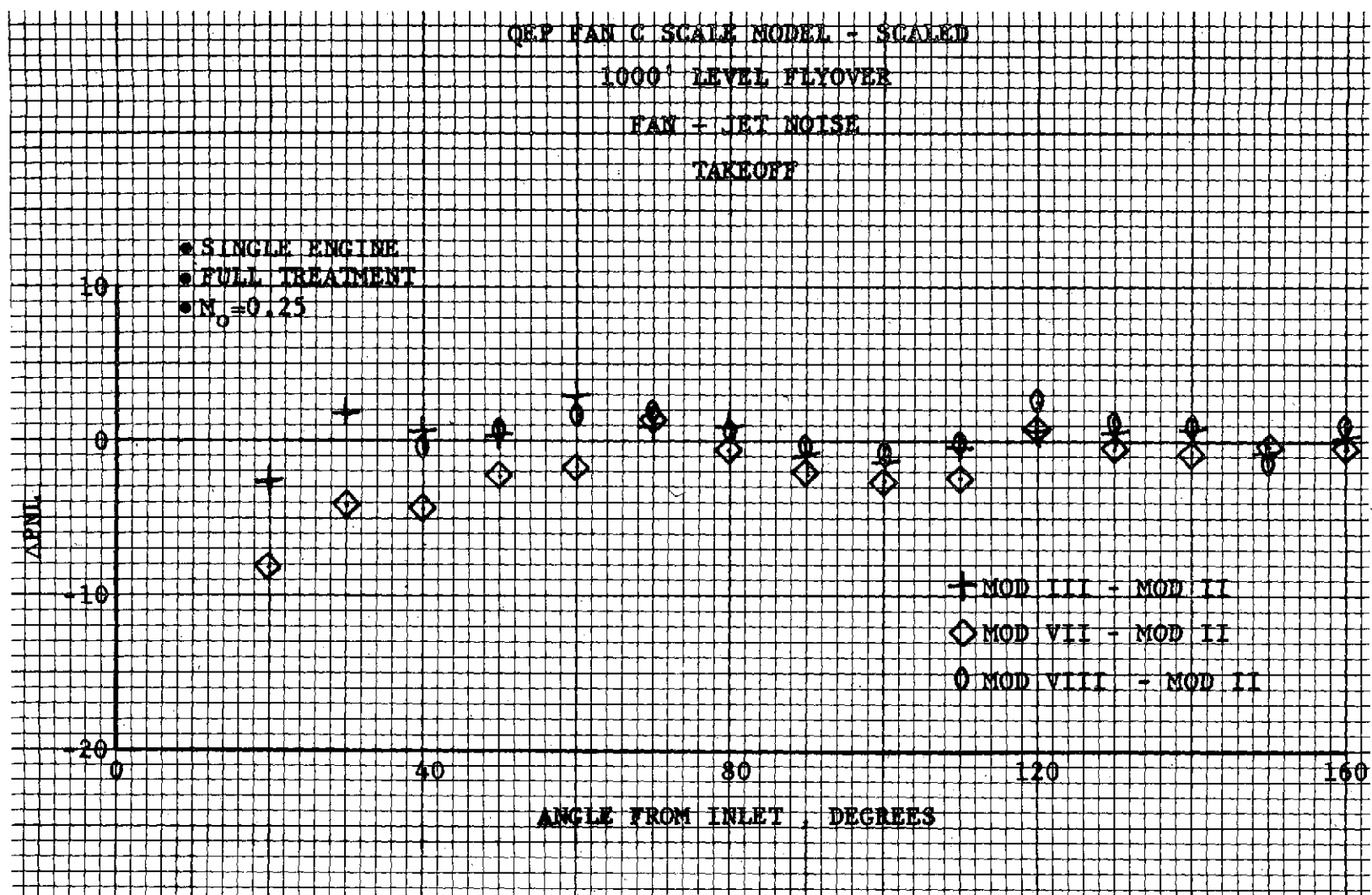


Figure 65. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

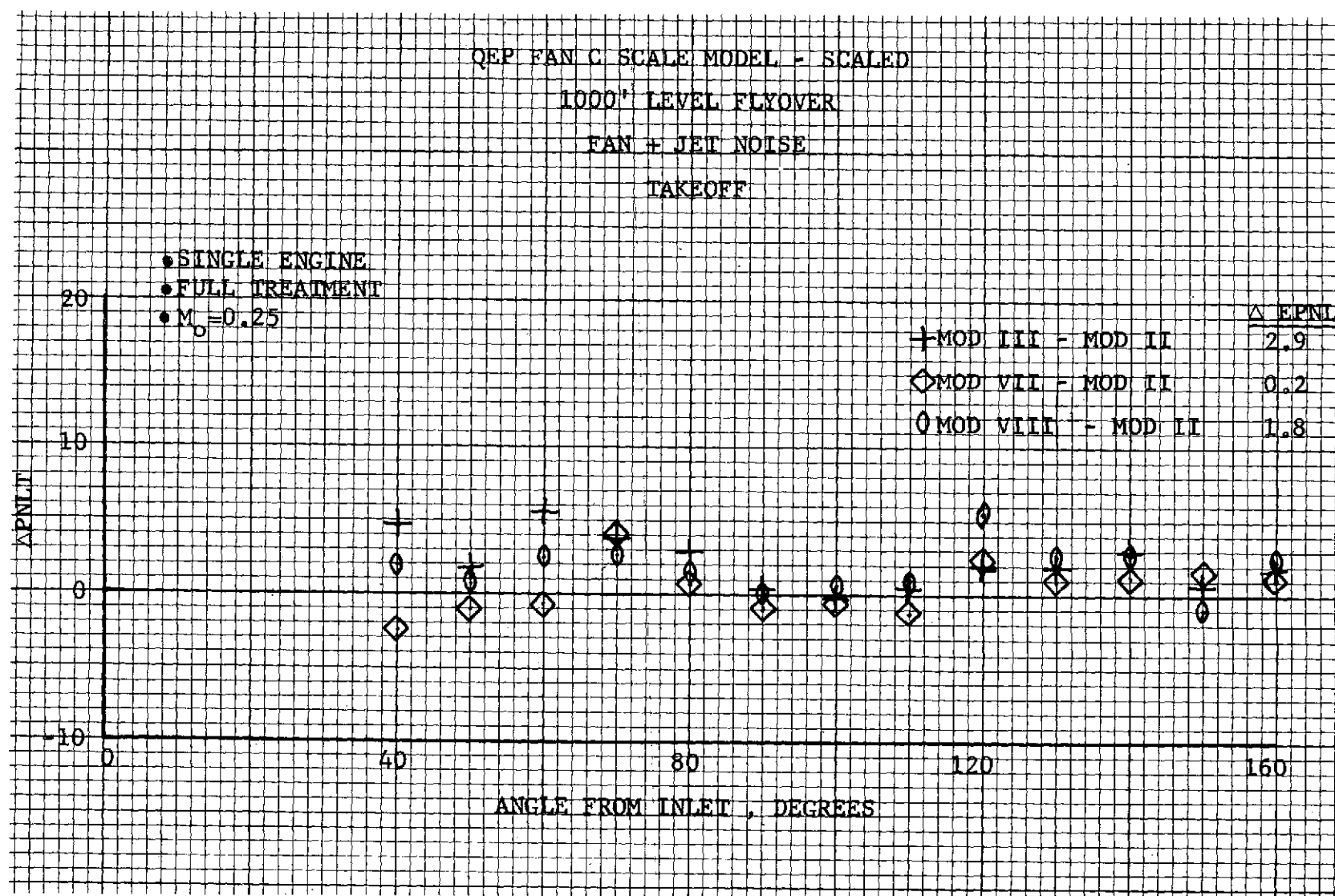


Figure 66. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

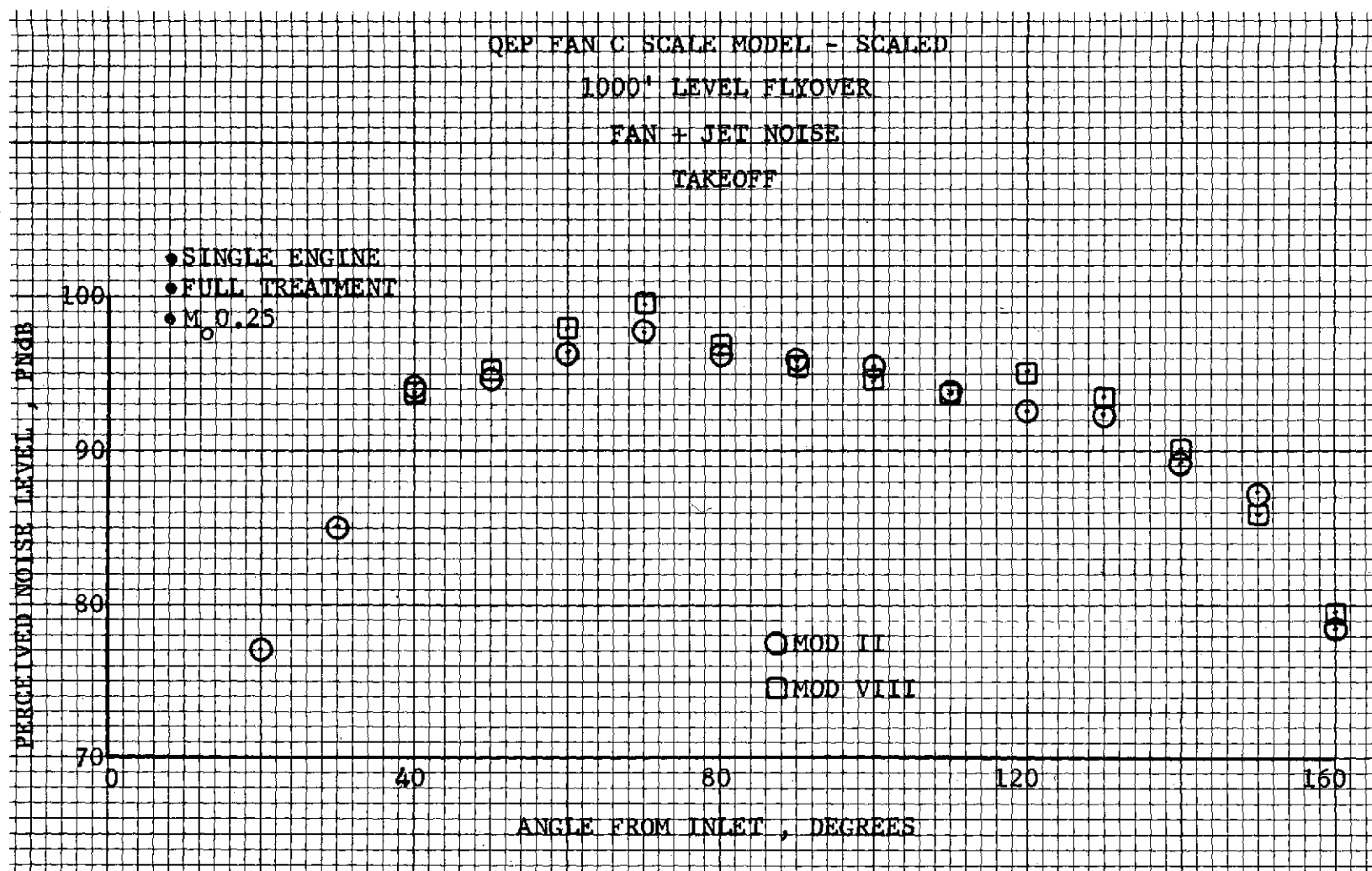


Figure 67. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

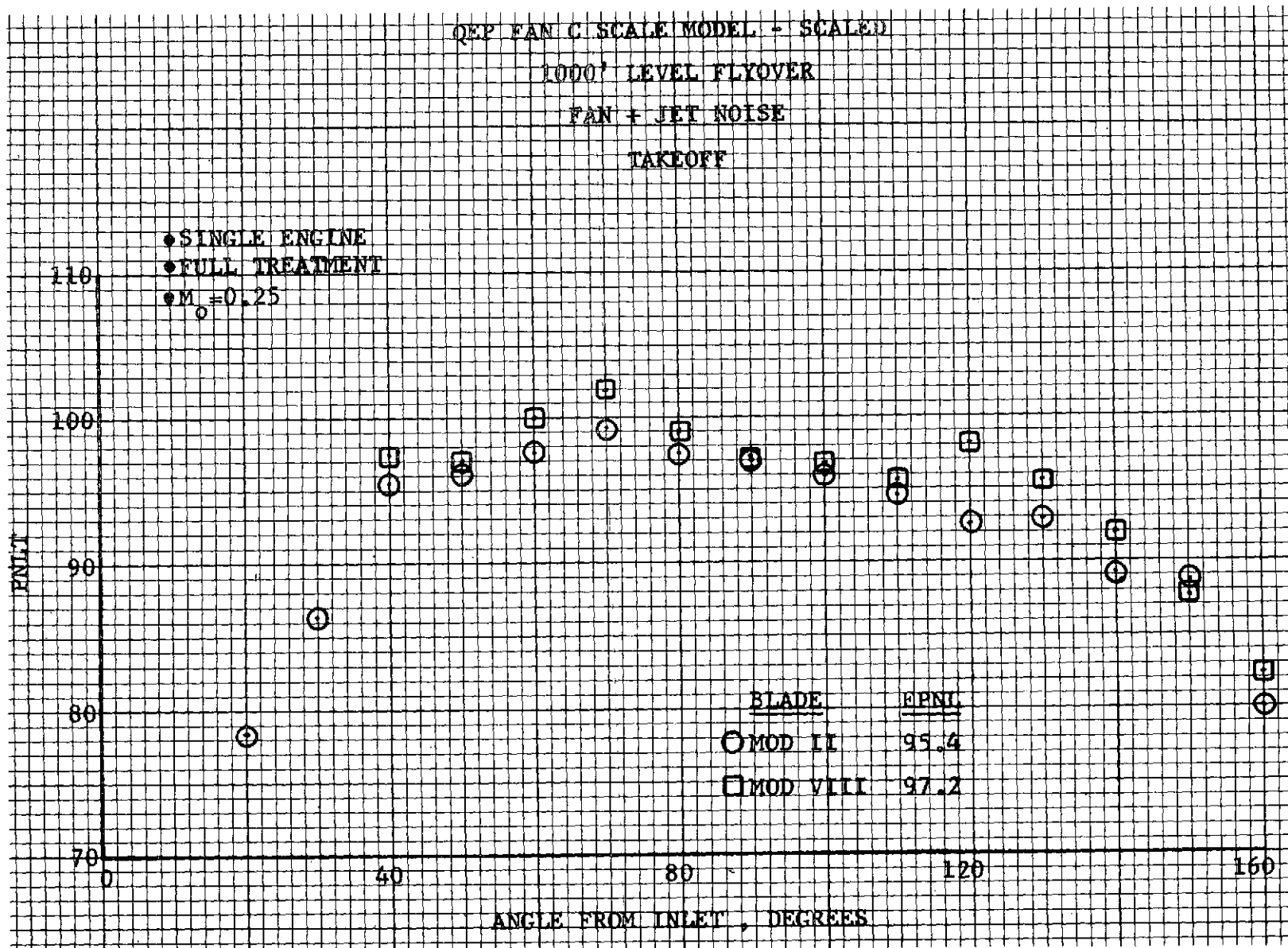


Figure 68. QEP Fan C Scale Model, Scaled 1000-Foot Level Flyover, Fan + Jet Noise, Takeoff.

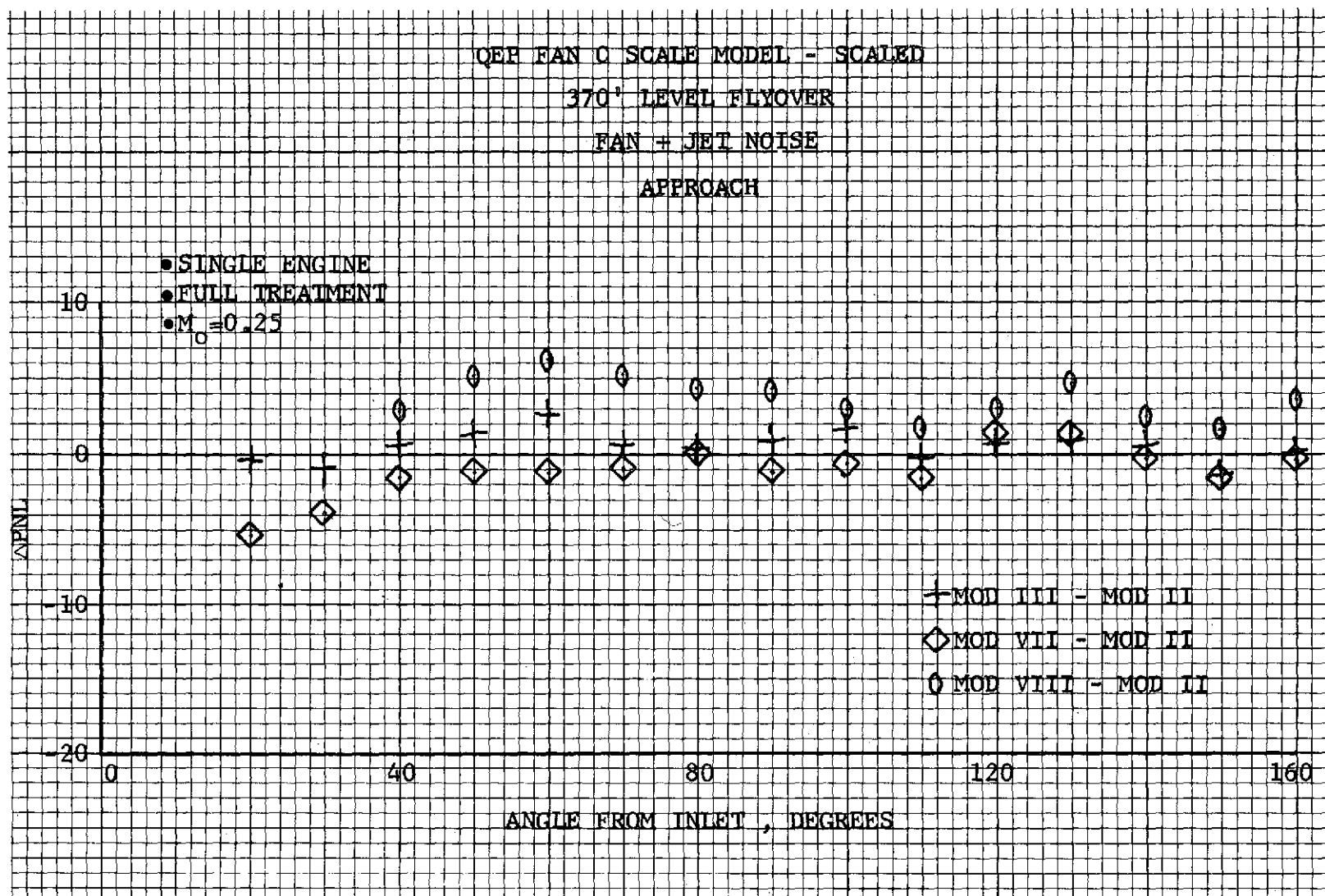


Figure 69. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

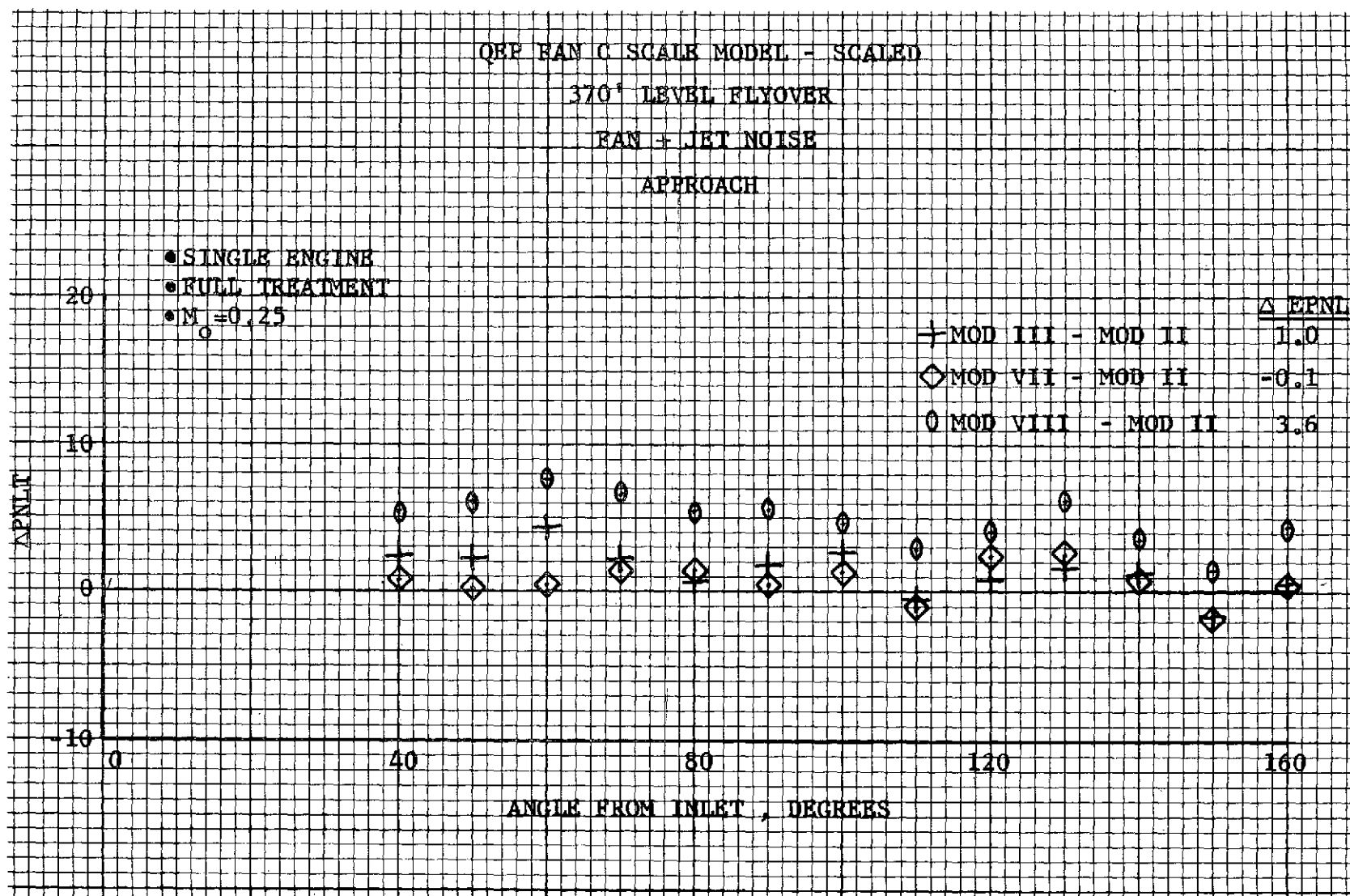


Figure 70. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

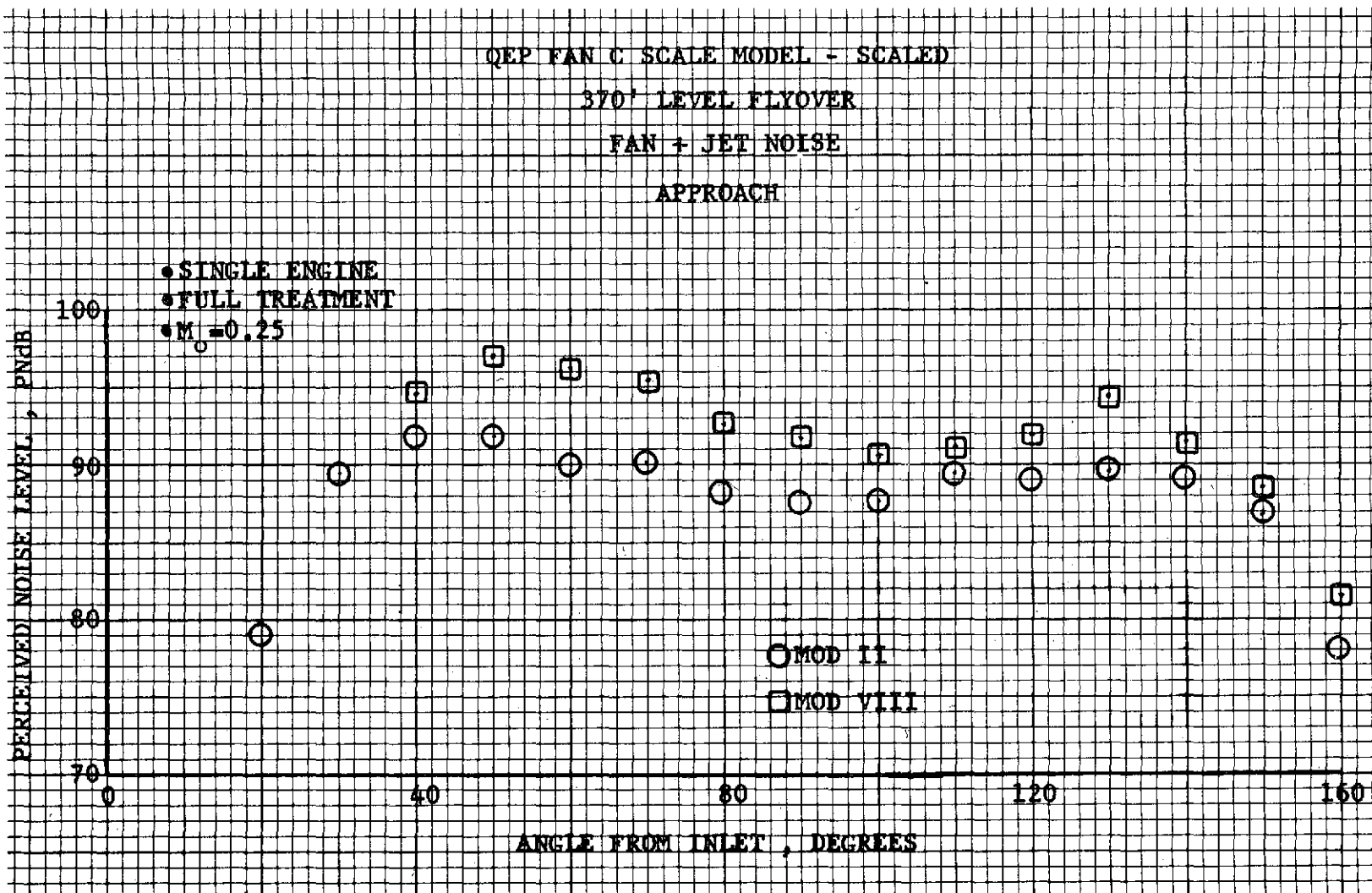


Figure 71. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

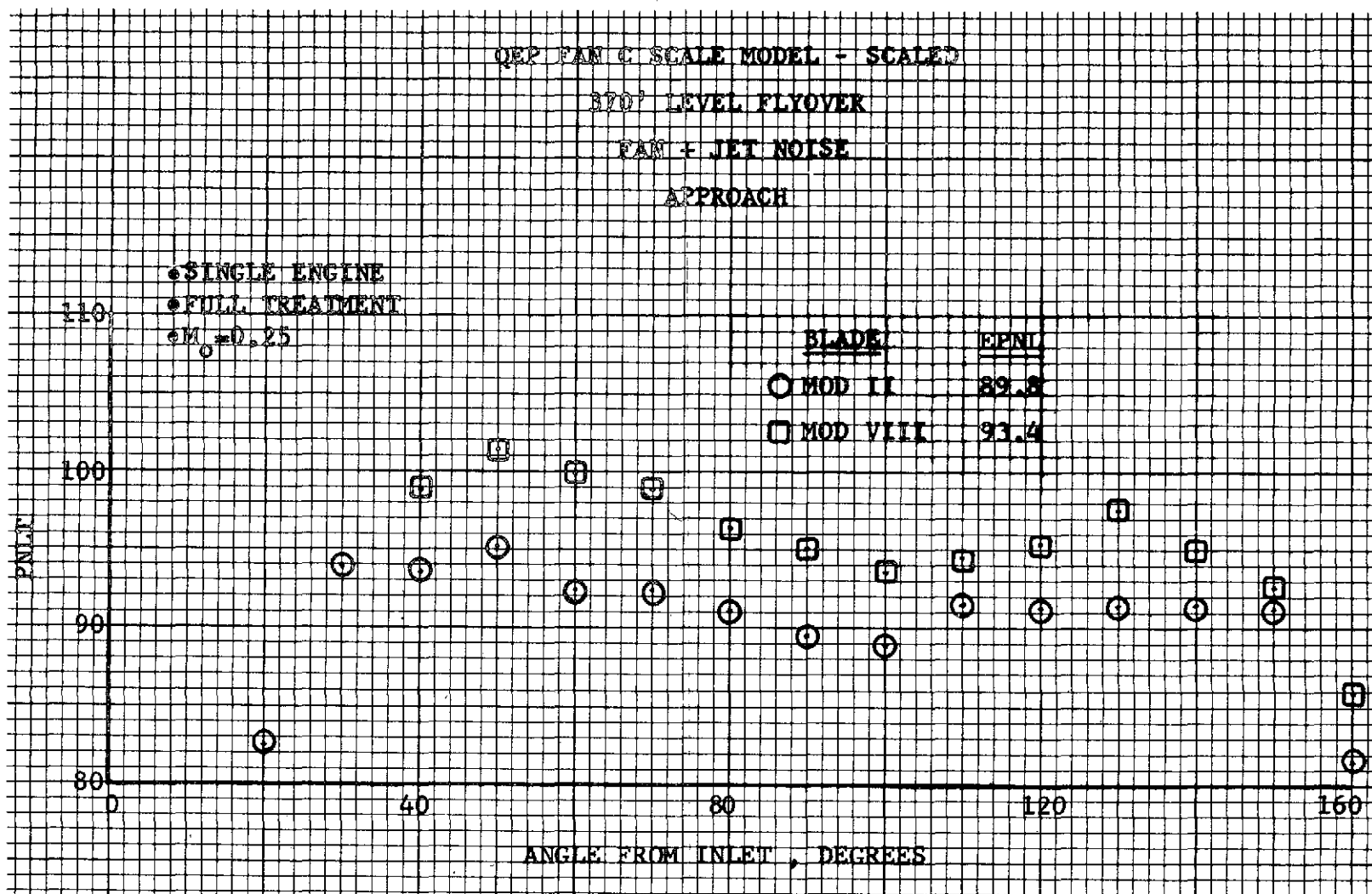


Figure 72. QEP Fan C Scale Model, Scaled 370-Foot Level Flyover, Fan + Jet Noise, Approach.

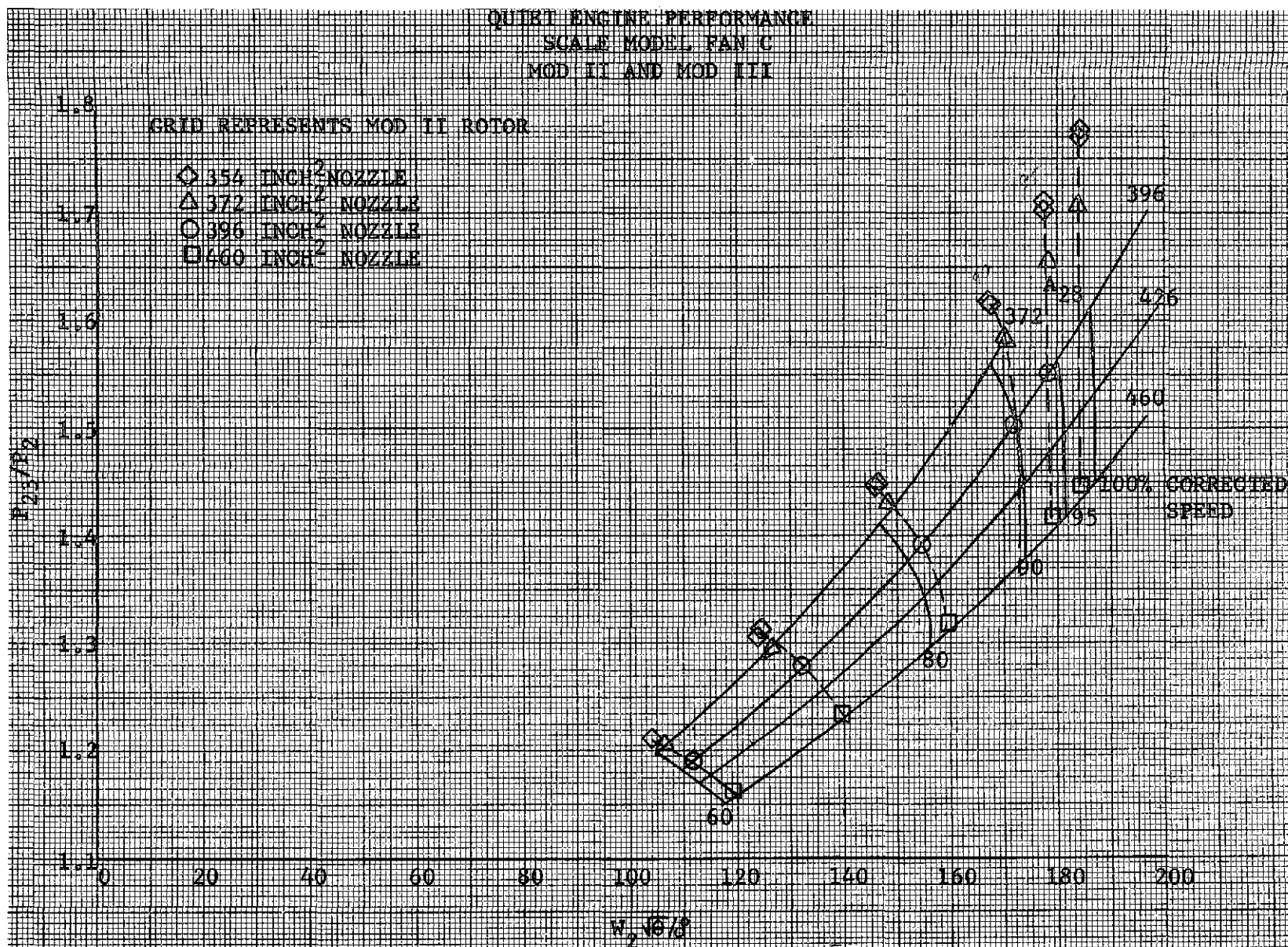


Figure 73. QEP Fan C Scale Model, Mod II and Mod III.

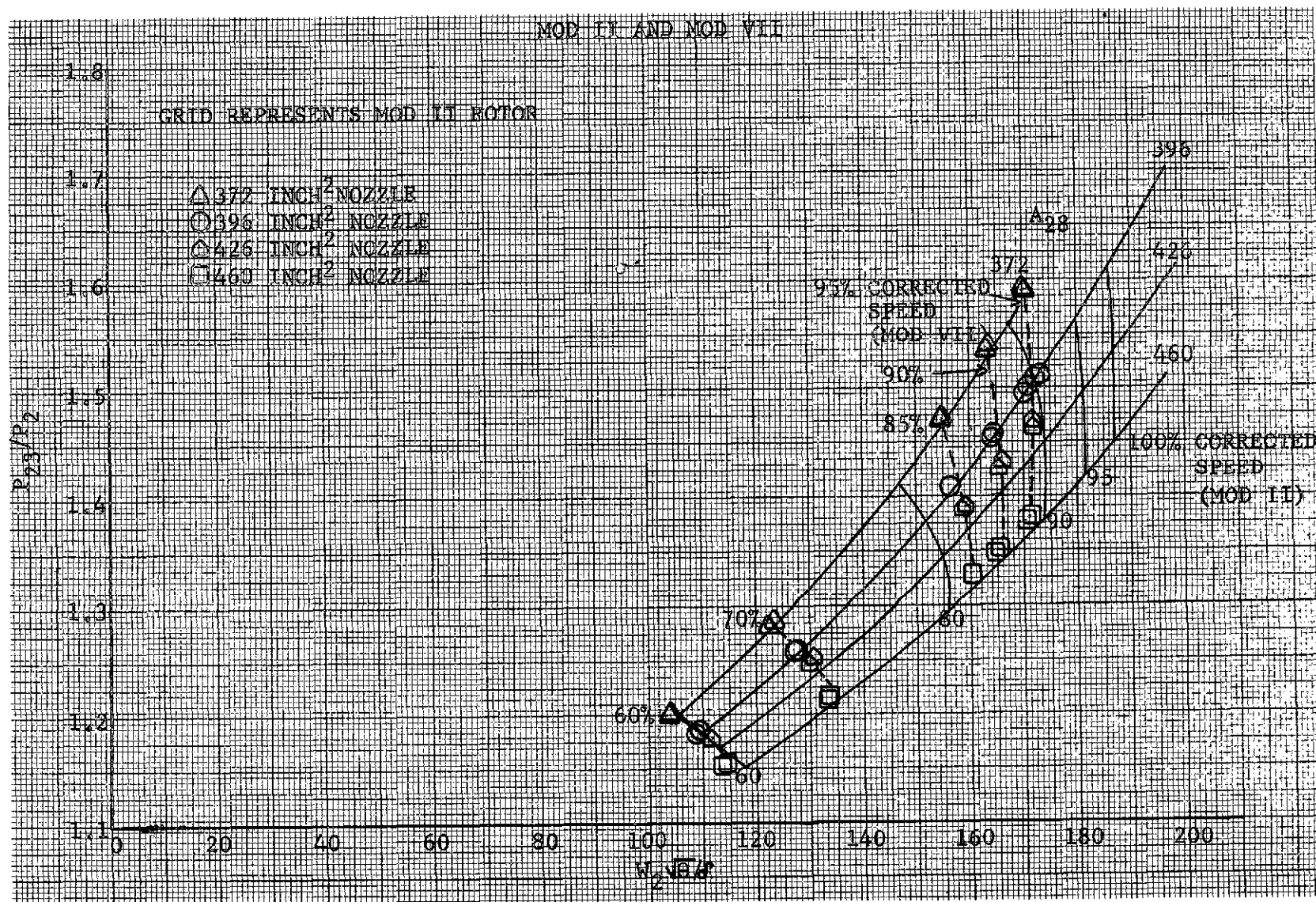


Figure 74. QEP Fan C Scale Model, Mod II and Mod VII.

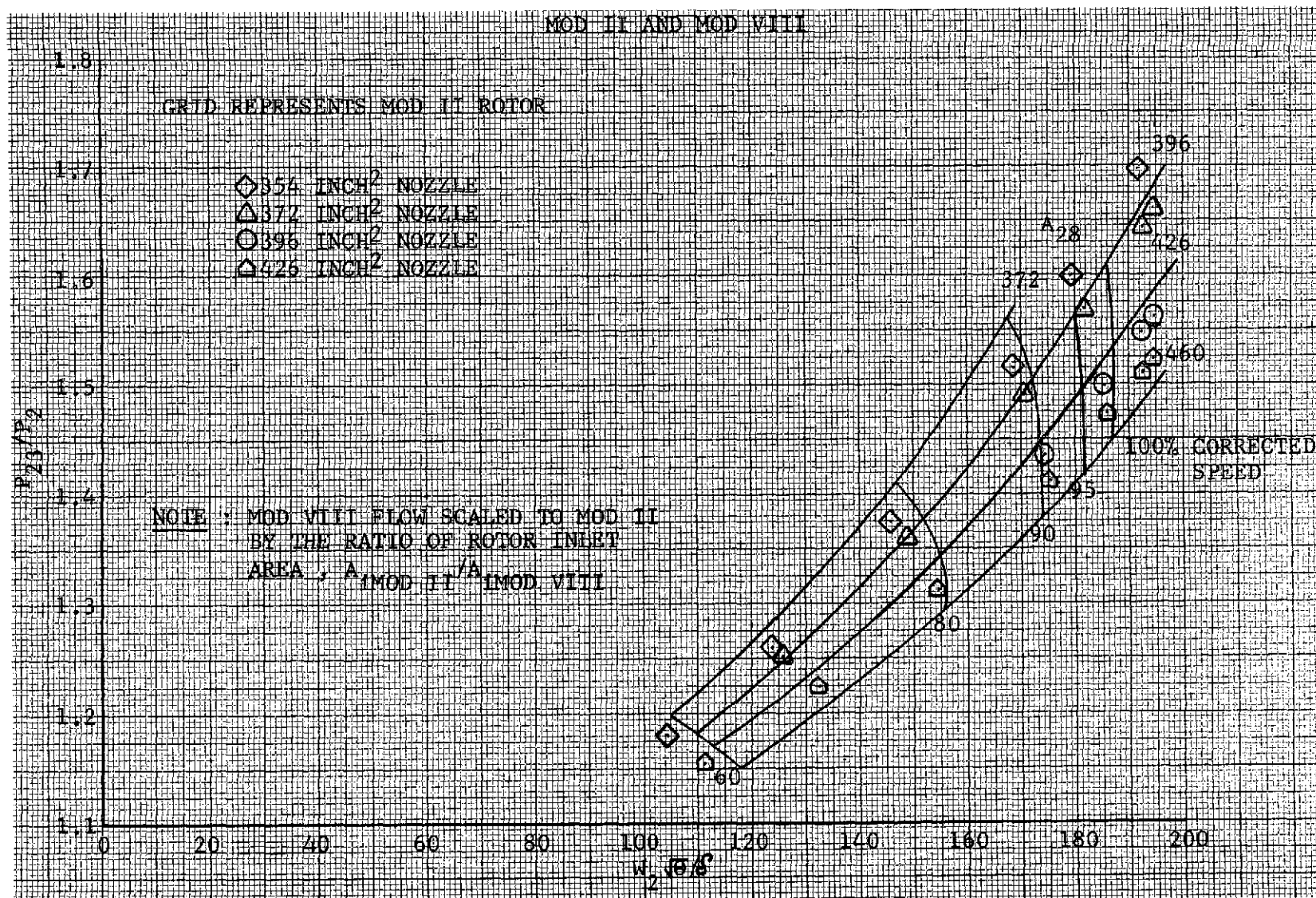


Figure 75. QEP Fan C Scale Model, Mod II and Mod VIII.

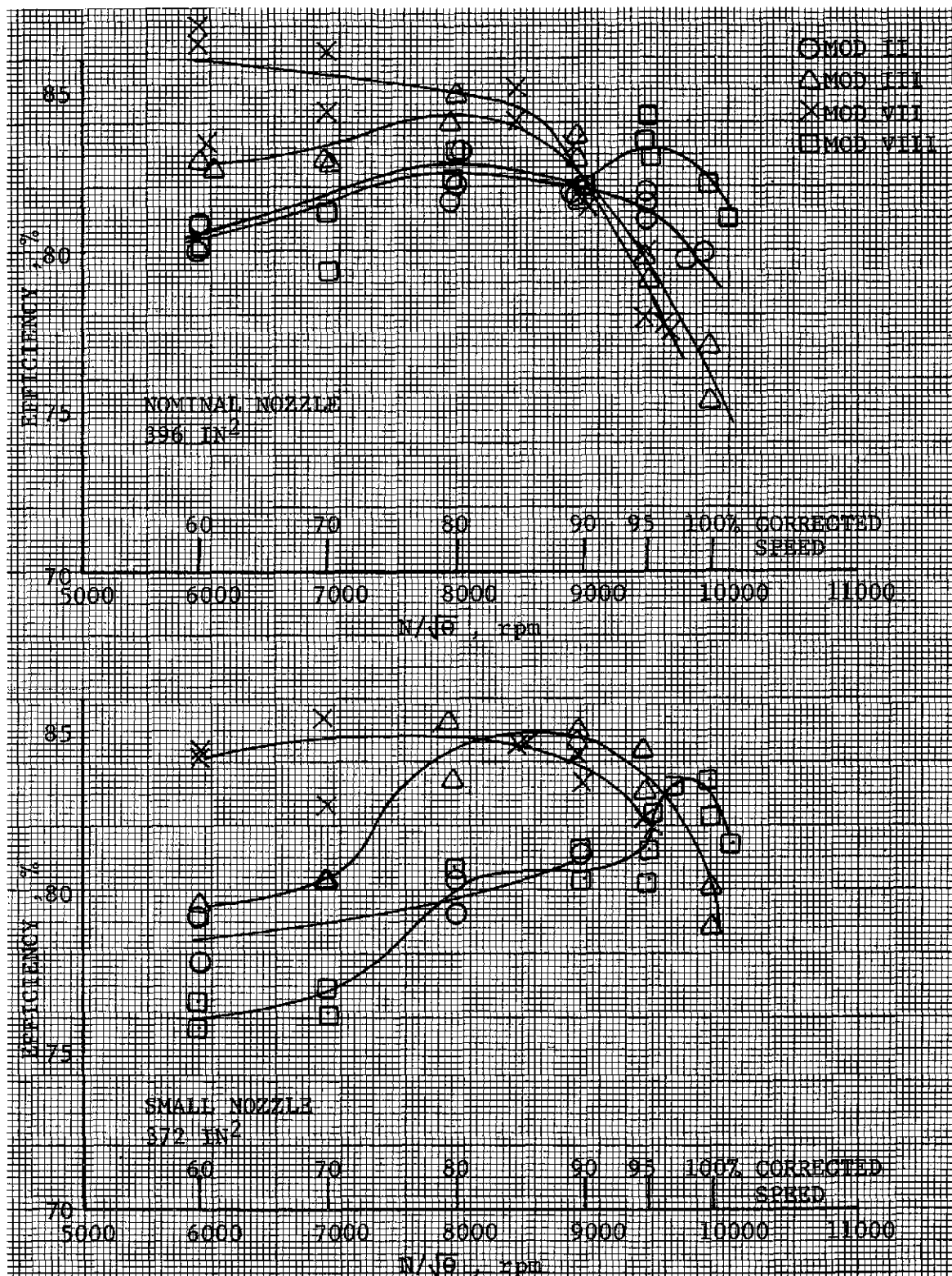


Figure 76. QEP Fan C Scale Model Performance.

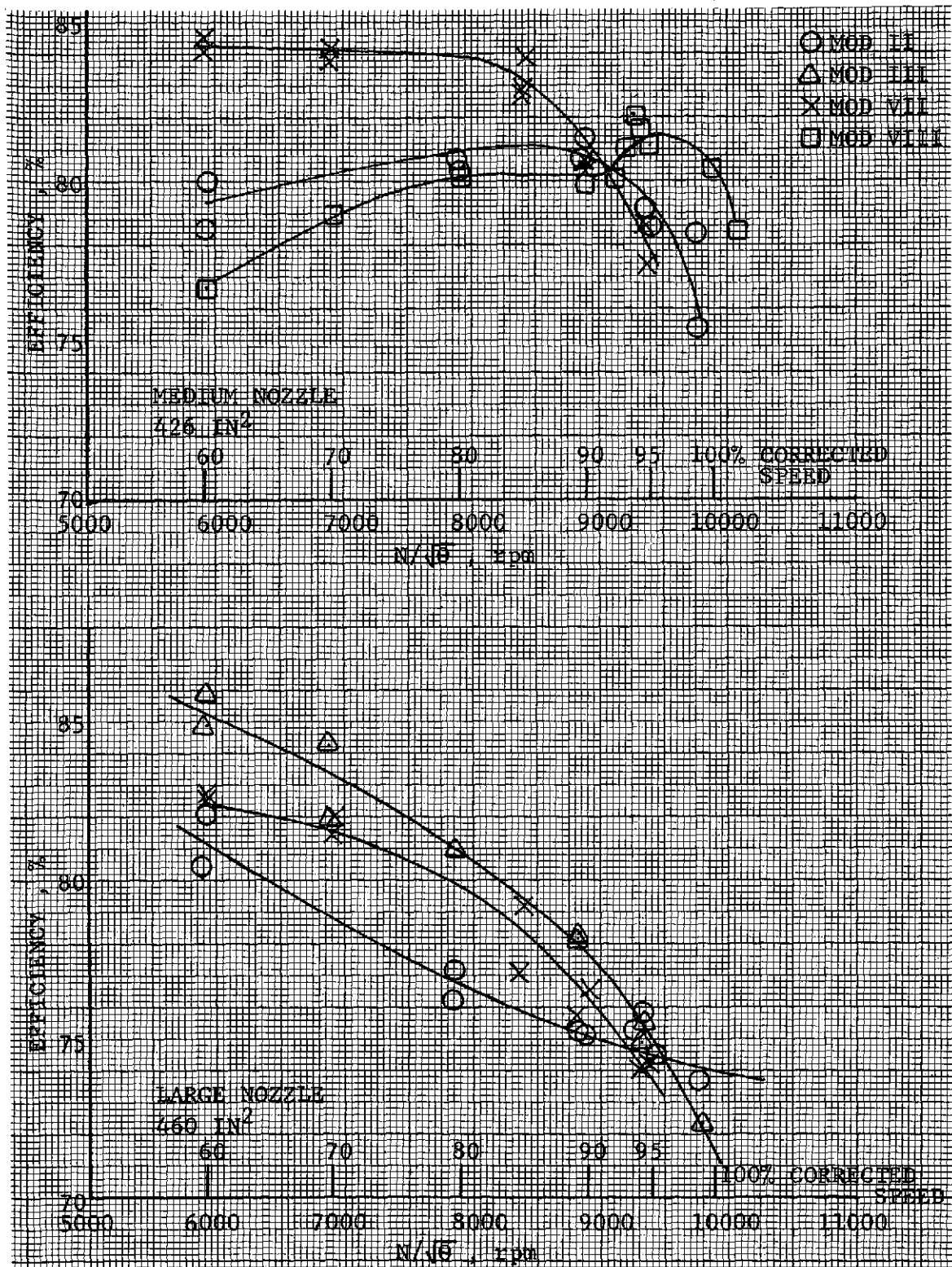


Figure 77. QEP Fan C Scale Model Performance.

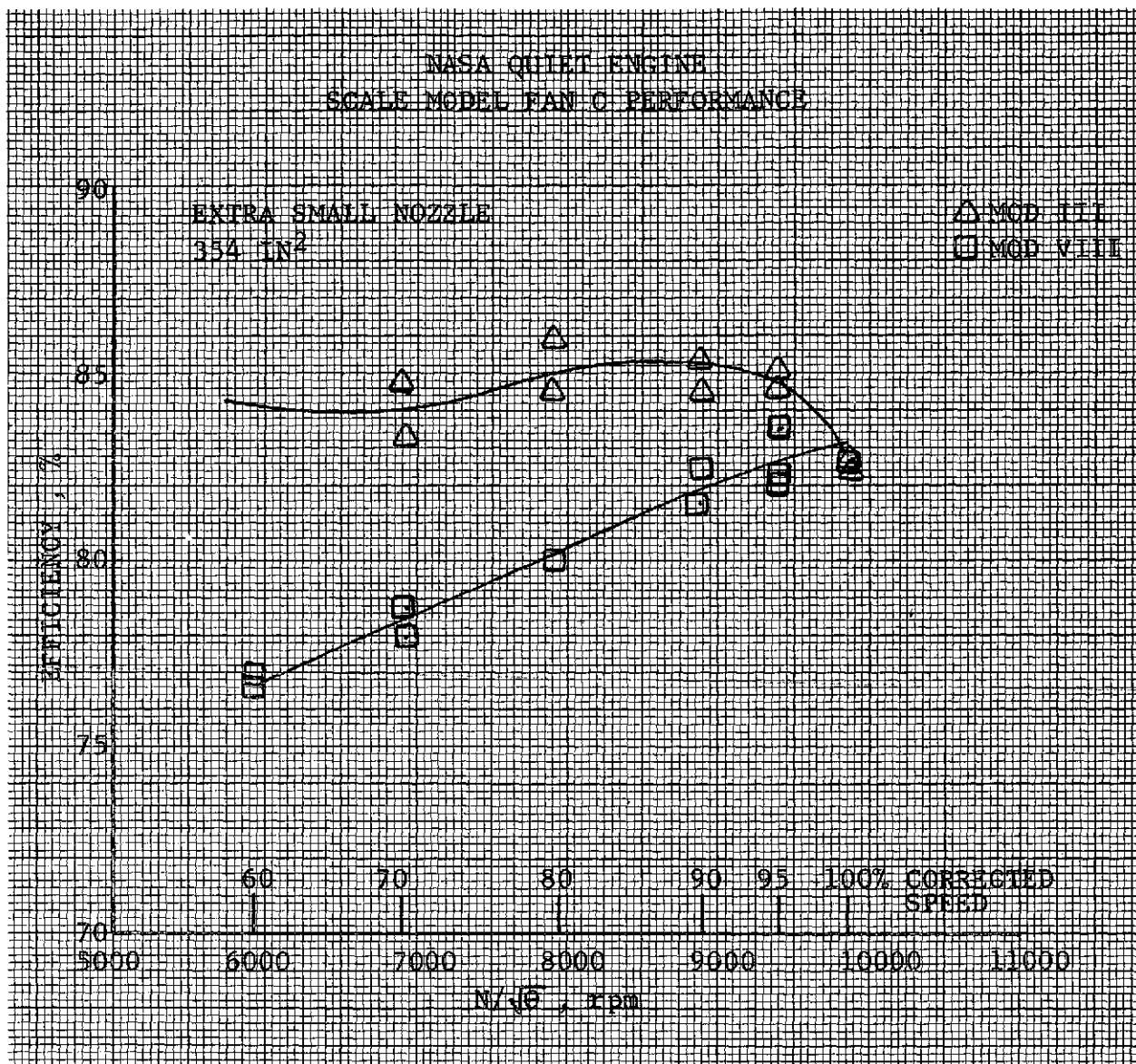


Figure 78. QEP Fan C Scale Model Performance.

VIII. APPENDIX - ONE-THIRD OCTAVE DATA

This appendix contains 1/3-octave scale model data corrected to 70% relative humidity on a 59° F (15° C) day. Each table consists of at least 24 bands of data at angles from 20 degrees to 160 degrees in 10-degree increments referenced to the inlet centerline.

The data presented are on 100-foot (30.48-m) arc and 200-foot (60.96 m) sideline for approach (57.5%) speed, take-off (90%) speed, 72% and 84% speeds. The 100-foot (30.48-m) arc is scale model data and the 200-foot (60.96-m) sideline data are full-scale. Data for all four blades in the treated and untreated configuration are included. All data are for the nominal fan nozzle.

Table A-I.

FULLY TREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PWL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
20	68.5	68.2	68.0	67.8	67.5	67.2	66.9	66.6	66.3	66.0	65.7	65.4	65.1	64.8	64.5		120.0
30	69.2	68.9	68.6	68.3	68.0	67.7	67.4	67.1	66.8	66.5	66.2	65.9	65.6	65.3	65.0		120.1
40	67.8	67.5	67.2	66.9	66.6	66.3	66.0	65.7	65.4	65.1	64.8	64.5	64.2	63.9	63.6		120.0
50	72.9	72.6	72.3	72.0	71.7	71.4	71.1	70.8	70.5	70.2	69.9	69.6	69.3	69.0	68.7		124.0
60	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3	64.0	63.7	63.4	63.1		118.0
70	67.2	66.9	66.6	66.3	66.0	65.7	65.4	65.1	64.8	64.5	64.2	63.9	63.6	63.3	63.0		119.2
80	68.7	68.4	68.1	67.8	67.5	67.2	66.9	66.6	66.3	66.0	65.7	65.4	65.1	64.8	64.5		124.1
90	71.1	70.8	70.5	70.2	69.9	69.6	69.3	69.0	68.7	68.4	68.1	67.8	67.5	67.2	66.9		128.3
100	73.1	72.8	72.5	72.2	71.9	71.6	71.3	71.0	70.7	70.4	70.1	69.8	69.5	69.2	68.9		128.8
125	72.3	72.0	71.7	71.4	71.1	70.8	70.5	70.2	69.9	69.6	69.3	69.0	68.7	68.4	68.1		124.4
150	70.4	70.1	69.8	69.5	69.2	68.9	68.6	68.3	68.0	67.7	67.4	67.1	66.8	66.5	66.2		121.5
200	71.8	71.5	71.2	70.9	70.6	70.3	70.0	69.7	69.4	69.1	68.8	68.5	68.2	67.9	67.6		125.4
250	68.9	68.6	68.3	68.0	67.7	67.4	67.1	66.8	66.5	66.2	65.9	65.6	65.3	65.0	64.7		121.2
300	69.9	69.6	69.3	69.0	68.7	68.4	68.1	67.8	67.5	67.2	66.9	66.6	66.3	66.0	65.7		121.4
350	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3	64.0		120.1
400	69.3	69.0	68.7	68.4	68.1	67.8	67.5	67.2	66.9	66.6	66.3	66.0	65.7	65.4	65.1		120.3
450	71.0	70.7	70.4	70.1	69.8	69.5	69.2	68.9	68.6	68.3	68.0	67.7	67.4	67.1	66.8		122.3
500	71.0	70.7	70.4	70.1	69.8	69.5	69.2	68.9	68.6	68.3	68.0	67.7	67.4	67.1	66.8		122.3
600	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
700	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
800	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
900	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
1000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
1250	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
1500	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
2000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
2500	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
3000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
3500	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
4000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
4500	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
5000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
6000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
7000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
8000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
9000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
10000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
12500	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
15000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
20000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
25000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
30000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
35000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
40000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
45000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
50000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
60000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
70000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
80000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
90000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
100000	68.5	68.2	67.9	67.6	67.3	67.0	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.6	64.3		121.1
OVERALL MEASURED	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5	85.5		139.5
OVERALL CALCULATED	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7	85.7		139.5
PND8	99.6	103.5	103.2	102.5	99.3	98.5	97.8	96.7	96.1	95.9	99.3	99.9	101.3	105.7	101.7		

Table A-II.

FULLY TREATED MOD II BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)															
50	62.8	66.1	70.1	67.6	73.9	72.8	68.5	71.0	74.9	74.2	72.8	75.4	68.5	69.0	63.7	
63	57.0	58.0	63.9	62.7	66.2	67.9	67.0	68.3	66.7	67.5	67.2	65.5	64.6	63.7	60.2	
80	56.7	57.9	63.2	63.0	64.1	65.2	67.9	68.6	68.1	69.4	68.6	68.0	66.9	66.6	63.5	
100	58.0	60.2	65.0	67.3	68.6	69.5	71.9	73.5	74.2	75.7	74.6	73.3	72.4	69.9	65.3	
125	60.2	65.5	69.8	72.5	74.6	75.2	77.6	78.4	79.3	80.1	78.3	77.3	75.1	72.2	66.2	
160	62.0	66.6	70.4	73.0	77.4	77.0	77.0	78.3	78.5	80.2	78.7	77.5	75.2	71.7	64.9	
200	60.9	66.6	69.6	69.1	71.3	72.2	72.1	73.1	74.2	75.3	73.9	72.8	69.9	67.9	61.3	
250	58.9	64.5	67.6	66.7	68.2	67.9	68.9	68.8	70.0	71.3	70.5	70.3	68.1	65.9	60.8	
315	59.9	64.9	68.1	68.2	68.9	69.9	71.5	72.7	73.0	73.6	72.5	71.2	69.3	67.3	62.0	
400	57.0	62.2	65.2	64.7	67.6	68.2	69.2	69.5	69.9	70.9	70.2	69.5	67.5	65.5	60.8	
500	57.7	62.7	68.3	68.3	68.1	68.5	68.3	69.3	68.8	70.4	70.0	69.7	67.0	63.0	58.6	
630	55.7	61.0	66.2	66.3	65.8	66.8	66.3	67.5	67.0	69.0	69.3	68.6	66.9	62.4	57.9	
800	56.6	63.5	66.9	66.5	67.0	67.3	65.9	65.9	67.0	68.4	67.8	67.4	66.9	64.2	58.1	
1000	58.0	68.2	71.0	69.8	68.8	68.6	67.4	66.2	67.6	69.0	68.1	67.2	66.2	67.8	59.5	
1250	67.8	79.2	76.3	79.1	75.2	75.3	75.5	73.2	70.9	74.4	74.3	72.5	73.5	79.0	68.7	
1600	54.3	63.2	70.0	67.3	66.6	67.2	64.3	65.4	63.6	65.2	64.0	65.0	64.1	62.6	54.3	
2000	52.6	65.7	69.4	70.1	68.3	66.9	66.8	65.6	65.6	67.8	66.4	68.4	65.9	66.2	57.3	
2500	56.4	72.7	75.1	75.0	68.9	71.1	68.1	66.5	67.2	68.6	68.8	70.1	70.0	68.2	59.4	
3150	53.5	66.6	72.3	72.2	70.3	69.5	67.3	66.8	65.4	68.9	68.3	70.9	71.1	64.8	55.0	
4000	51.3	68.6	73.8	71.7	71.4	70.2	67.2	66.5	66.7	70.3	69.8	70.0	69.3	65.5	54.7	
5000	52.2	69.3	74.4	72.7	72.6	71.5	69.7	67.3	65.7	69.2	69.0	70.0	68.7	64.8	54.0	
6300	49.2	68.8	73.9	71.8	71.4	70.4	67.2	65.9	65.4	67.0	67.4	68.0	67.2	63.3	51.7	
8000	47.3	68.1	74.4	72.4	71.7	70.6	67.5	66.8	69.9	67.8	67.2	68.1	67.2	62.8	50.2	
10000	44.1	64.9	72.7	70.8	70.6	70.2	67.7	66.4	71.3	67.9	66.2	67.7	65.6	59.8	46.3	
OVERALL CALCULATED	72.8	82.6	85.1	85.1	85.0	84.9	84.7	85.1	85.8	86.9	85.8	85.4	83.6	82.9	75.4	
PND8	82.2	94.4	97.9	97.5	96.3	95.9	94.6	93.8	94.0	96.1	95.5	95.9	95.1	93.3	84.2	

Table A-III.

FULLY TREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

72% FAN SPEED

MODEL	SOUND PRESSURE LEVELS (59 DEG. F., 70 PERCENT REL. HUM., DAY) - ANGLES FROM INLET IN DEGREES (AND RADIAN)																PWL
	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
FREQ.	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)		
50	73.8	72.1	70.7	72.8	72.5	72.4	73.9	75.0	75.1	77.1	76.8	78.0	79.4	84.5	88.0		127.7
63	71.9	71.9	72.5	76.0	76.0	73.7	73.9	75.6	75.3	76.6	77.2	78.0	79.7	83.7	87.0		127.6
80	68.5	70.4	70.8	72.0	72.3	72.1	73.3	73.6	74.7	76.9	76.4	78.1	79.5	82.2	84.1		126.1
100	71.6	76.7	77.0	74.8	75.4	74.9	74.5	74.5	76.3	77.3	77.2	78.0	78.8	80.5	80.7		126.5
125	73.3	74.1	75.8	77.1	77.0	76.6	72.4	74.0	73.1	75.2	78.1	77.3	78.1	80.0	81.2		126.3
160	69.2	70.0	70.4	69.7	70.1	70.4	72.3	72.9	73.9	76.8	77.0	79.3	80.7	83.6	84.1		126.6
200	70.0	71.7	74.1	74.3	74.4	74.9	77.3	79.2	80.1	82.2	82.4	83.7	85.2	86.6	85.7		130.8
250	75.7	77.8	80.9	81.3	81.6	82.0	84.0	85.6	85.8	87.4	87.4	88.1	88.9	88.4	86.4		135.4
315	77.8	80.4	81.6	81.7	84.2	83.4	83.3	84.2	85.4	87.4	86.7	87.8	87.5	87.3	85.0		135.1
400	76.7	79.6	80.2	79.0	79.6	79.1	80.2	80.2	82.6	84.2	83.3	84.0	83.1	82.7	80.9		131.6
500	77.3	78.5	79.6	77.0	79.0	77.2	83.3	78.8	85.7	84.3	82.0	83.9	83.8	83.5	81.9		132.2
630	79.3	78.0	80.3	82.0	83.0	82.1	80.4	83.8	82.0	86.1	83.7	84.1	83.9	84.6	82.8		133.1
800	73.7	75.6	77.3	74.4	76.3	78.0	78.2	78.9	79.0	81.0	81.6	81.7	81.4	81.2	79.9		129.4
1000	72.9	75.3	76.1	75.0	75.9	77.5	77.2	78.4	78.7	80.1	81.3	81.6	80.7	79.5	78.5		128.9
1250	73.1	75.5	76.8	76.6	75.6	75.8	74.7	76.4	76.4	78.6	79.6	80.2	79.9	78.6	78.6		127.7
1600	72.2	76.2	81.0	76.0	76.7	78.1	78.8	75.5	77.1	77.9	77.8	78.2	78.7	78.7	77.5		127.7
2000	74.1	78.6	82.6	81.8	80.0	75.6	75.2	74.8	76.7	79.0	78.6	79.1	78.5	81.1	78.5		129.2
2500	75.9	81.2	83.1	80.4	78.0	77.9	74.7	74.8	74.1	78.7	77.4	79.3	79.2	80.3	77.3		129.0
3150	84.2	88.1	92.0	86.5	87.0	85.4	80.5	79.4	75.9	81.0	80.0	84.8	85.2	84.7	84.6		135.9
4000	72.9	79.3	82.0	82.2	79.1	77.0	75.8	74.5	74.7	77.6	77.0	78.9	77.7	81.8	77.2		129.4
5000	75.4	84.2	85.8	81.4	78.4	78.1	73.4	73.5	74.9	75.6	77.4	78.5	78.7	80.4	78.0		130.4
6300	76.5	83.8	88.9	87.2	83.6	81.9	78.2	76.8	76.2	77.9	78.5	82.7	82.0	83.2	78.2		134.1
8000	71.7	83.8	85.8	82.2	80.9	78.9	75.5	74.5	74.3	76.9	77.9	80.0	78.9	80.4	75.8		131.8
10000	72.7	83.9	85.7	82.3	80.7	78.3	75.8	74.2	73.2	76.9	77.9	81.5	78.9	79.7	75.7		132.7
12500	71.7	83.8	85.4	81.4	79.5	77.8	74.7	73.2	73.7	79.0	75.5	77.8	77.5	78.6	74.5		132.9
16000	71.7	82.4	85.3	81.0	79.3	77.4	74.1	73.0	76.4	74.8	74.8	77.9	76.9	77.4	73.9		134.5
20000	70.1	79.5	83.3	79.0	77.3	76.0	73.2	71.7	76.5	74.1	73.4	77.3	76.0	75.1	71.7		135.5
OVERALL MEASURED	89.1	85.3	94.0	95.3	94.7	93.8	92.9	93.6	94.6	96.3	95.9	97.0	97.3	97.9	97.2		
OVERALL CALCULATED	89.6	84.9	94.9	94.9	94.2	93.1	92.4	93.7	93.7	96.4	95.0	96.4	96.4	97.8	96.8		126.1
PND	104.2	108.6	111.9	108.3	108.0	106.7	104.0	103.7	102.9	105.9	105.6	108.3	108.3	108.8	107.7		

Table A-IV.

FULLY TREATED MOD II BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F., 90 PERCENT REL. HUM. DAY)															
50	61.5	70.1	72.6	72.0	73.7	73.9	73.9	74.1	75.7	76.3	75.5	75.3	74.5	73.9	70.6	
63	63.0	67.4	71.4	74.3	75.3	75.6	71.7	73.5	72.5	74.2	76.4	74.5	73.6	73.3	70.9	
80	58.7	63.2	65.9	66.8	68.3	69.3	71.7	72.4	73.2	75.8	75.2	76.4	76.2	76.8	73.6	
100	59.3	64.6	69.6	71.3	72.5	73.8	76.6	78.7	79.4	81.1	80.6	80.8	80.6	79.6	75.0	
125	64.8	70.7	76.3	78.3	79.7	80.8	83.3	85.0	85.0	86.3	85.5	85.1	84.2	81.4	75.5	
160	66.7	73.2	76.9	78.6	82.2	82.2	82.5	83.5	84.7	86.2	84.8	84.8	82.8	80.1	73.9	
200	65.4	72.3	75.3	75.9	77.6	77.9	79.4	79.5	81.8	83.0	81.3	80.9	78.2	75.4	69.6	
250	65.8	71.1	74.7	73.8	77.0	75.9	82.5	78.1	84.9	83.1	80.0	80.7	78.9	78.1	70.4	
315	63.5	70.5	75.3	78.7	80.9	80.8	79.5	83.1	81.1	84.8	81.6	80.9	78.9	77.0	71.1	
400	61.8	67.9	72.2	71.0	74.1	76.7	77.2	78.1	78.1	79.6	79.4	78.3	76.3	73.5	67.9	
500	60.7	67.5	70.9	71.6	73.7	76.1	76.3	77.6	77.7	78.7	79.1	78.2	75.5	71.6	66.3	
630	60.6	67.5	71.5	72.5	73.3	74.3	73.7	75.5	75.4	77.1	77.4	76.7	74.6	70.6	66.1	
800	59.5	68.0	75.6	72.5	74.4	74.6	74.8	74.6	76.1	76.4	75.5	74.7	73.3	70.6	64.7	
1000	61.1	70.3	77.1	78.2	77.6	74.0	74.1	73.9	75.7	77.5	76.2	75.5	73.0	72.8	65.5	
1250	62.6	72.7	77.5	76.7	75.6	76.4	73.6	73.8	73.5	75.4	75.0	75.7	73.6	71.8	64.0	
1600	70.6	79.5	86.3	82.7	84.5	83.8	79.4	78.5	74.8	79.5	77.5	81.1	79.5	78.0	70.9	
2000	58.9	70.4	78.2	78.5	76.7	75.5	74.7	73.7	73.7	76.1	74.6	75.1	72.0	73.0	63.2	
2500	61.0	75.2	79.9	77.5	75.9	76.5	72.3	72.6	73.8	74.0	74.9	74.6	72.8	71.3	63.6	
3150	61.6	74.5	82.9	83.3	81.2	80.3	77.2	76.0	75.2	76.4	76.0	78.8	76.0	74.0	63.2	
4000	56.0	74.2	79.7	78.3	78.5	77.5	74.6	73.8	73.4	75.5	75.5	76.1	72.8	70.8	60.2	
5000	57.1	74.7	80.0	78.9	78.9	77.5	75.4	74.0	72.9	76.1	76.0	78.1	73.2	70.4	60.1	
6300	55.1	74.2	79.8	78.2	78.0	77.3	74.8	73.5	73.8	74.5	73.9	74.6	71.8	68.9	57.9	
8000	53.5	72.3	79.8	78.3	78.4	77.7	75.0	74.1	77.2	75.0	73.9	75.1	71.4	67.4	55.8	
10000	49.8	68.8	77.8	76.7	77.0	77.1	75.0	73.8	78.3	75.2	73.1	75.0	70.5	64.4	51.3	
OVERALL CALCULATED	76.7	86.2	92.1	91.4	92.0	91.8	91.4	91.9	92.8	94.0	92.8	92.9	91.1	88.9	83.4	
PNDB	87.9	98.7	105.5	105.3	104.7	104.2	102.3	101.8	102.0	103.2	102.5	103.8	101.2	99.0	91.2	

Table A-V.

FULLY TREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL	SOUND PRESSURE LEVELS (59 DEC. PL 70 PERCENT REL. HUM. DAYS) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																PNL
	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
FREQ.	(0.35)	(0.62)	(0.70)	(0.87)	(1.05)	(1.23)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)		
80	74.5	73.1	73.2	73.6	73.8	74.0	74.2	74.4	74.6	74.8	75.0	75.2	75.4	75.6	75.8		132.5
100	72.9	72.8	73.7	74.2	74.4	74.5	74.6	74.7	74.8	74.9	75.0	75.1	75.2	75.3	75.4		132.0
125	72.1	73.9	73.6	74.3	74.7	74.9	75.1	75.3	75.5	75.7	75.9	76.1	76.3	76.5	76.7		131.9
150	70.9	74.8	75.1	77.1	78.4	77.9	78.3	78.6	79.3	81.2	80.7	82.7	84.2	86.7	87.1		130.7
175	75.7	75.4	81.8	82.0	80.3	76.5	76.6	78.6	78.2	80.4	79.9	84.4	83.9	86.3	87.3		131.1
200	72.6	74.1	75.5	75.4	75.2	75.1	76.8	77.3	78.4	81.3	82.0	84.7	86.4	89.3	90.4		132.1
250	74.3	75.7	77.4	77.8	78.1	78.6	80.3	81.9	83.2	85.7	86.1	88.5	90.5	92.9	94.4		135.5
300	81.7	85.7	86.0	86.9	86.4	87.5	88.8	90.9	91.8	94.2	95.4	94.7	95.1	94.8	93.6		141.7
350	82.5	85.0	85.4	85.5	87.3	86.9	86.2	87.5	88.6	91.4	91.5	92.5	92.8	92.9	91.0		139.4
400	88.0	83.1	83.4	83.4	83.9	84.3	83.7	86.0	87.2	89.8	88.7	89.2	88.8	88.9	87.6		136.7
500	83.3	87.6	89.2	93.3	89.9	85.5	84.7	83.6	89.0	91.0	88.0	92.1	89.2	89.7	87.4		138.9
600	82.7	87.6	91.9	90.1	91.9	93.1	89.8	88.7	87.9	92.0	90.3	89.3	89.1	91.6	87.9		140.2
800	78.0	81.2	83.2	81.8	83.8	85.6	82.7	84.0	85.3	87.0	86.6	87.7	87.9	87.6	84.8		135.5
1000	82.3	83.9	82.4	86.5	88.3	92.1	87.6	86.3	88.5	87.0	86.7	87.8	87.3	86.4	85.7		137.9
1250	80.4	83.3	86.5	87.7	89.5	81.9	85.2	85.4	87.1	84.6	86.1	86.7	87.2	88.5	84.2		136.3
1500	79.8	81.6	90.7	86.0	87.7	88.0	85.6	82.8	84.4	84.7	84.3	84.6	84.9	85.5	83.8		136.2
2000	79.7	83.4	90.1	92.3	89.6	87.9	83.8	80.6	84.6	86.1	86.4	86.1	86.7	89.1	85.0		137.7
2500	80.9	85.6	88.1	85.9	92.4	86.3	82.6	81.3	82.9	84.0	85.2	85.0	85.9	86.2			136.6
3150	81.4	87.9	95.2	89.3	89.5	87.9	85.8	84.8	81.7	87.7	86.1	85.6	87.3	89.7	88.0		139.0
4000	78.0	85.6	90.3	89.4	88.4	86.3	85.5	83.2	81.4	85.9	84.6	85.4	84.7	80.6	86.2		137.3
5000	80.3	88.7	90.1	88.0	84.7	86.4	83.4	82.2	82.6	81.7	83.0	83.9	82.9	84.3	83.1		136.2
6300	78.6	84.0	89.5	98.2	88.8	88.6	86.8	84.0	80.5	83.5	83.4	87.3	84.5	85.1	82.3		137.9
8000	76.9	88.3	91.0	88.2	87.6	89.1	86.3	84.1	81.5	83.4	83.5	85.1	83.8	85.6	81.6		138.4
10000	77.5	87.9	90.2	88.2	87.7	87.8	84.4	81.6	79.5	82.9	83.4	84.9	83.6	84.5	80.8		138.4
12500	74.9	86.7	89.2	84.8	85.5	85.2	83.2	80.9	78.4	80.3	80.6	82.8	81.9	82.9	79.3		138.0
16000	74.2	85.1	88.3	85.5	84.6	84.0	81.3	79.2	79.4	79.9	80.6	83.0	81.2	81.5	77.0		139.0
20000	72.1	82.0	85.5	82.7	81.7	81.3	78.9	76.6	78.7	79.0	78.9	81.5	79.8	78.7	75.0		139.2
OVERALL MEASURED	94.0	98.8	101.3	99.2	100.8	99.5	98.6	97.5	98.4	100.7	100.4	100.4	100.8	101.0	99.8		191.7
OVERALL CALCULATED	93.5	99.4	102.6	101.5	101.2	100.9	98.2	98.3	98.7	101.2	101.0	101.9	101.8	101.2	102.5		
PNDB	105.8	111.4	116.4	113.8	114.2	112.6	110.5	109.7	108.8	112.2	111.6	112.2	112.6	114.5	112.8		

Table A-VI.
FULLY TREATED MOD II BLADES
SCALE MODEL - SCALED DATA
NOMINAL NOZZLE
200' SIDELINE
84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG, F, 70 PERCENT REL. HUM, DAY)															
50	66.7	68.2	70.8	74.3	76.7	76.9	77.8	78.2	78.9	80.2	79.0	79.9	79.8	80.2	77.0	
63	65.4	68.7	77.4	79.1	78.6	75.4	76.0	78.1	77.6	79.4	78.2	81.5	79.5	79.4	77.0	
80	62.0	67.3	71.0	72.5	73.4	74.0	76.1	76.8	77.7	80.3	80.2	81.8	81.9	82.8	79.8	
100	63.6	68.8	72.8	74.8	76.3	77.5	79.6	81.4	82.6	84.6	84.3	85.5	85.9	85.9	80.7	
125	70.8	78.7	81.3	83.9	84.5	86.3	86.1	90.3	90.2	93.0	93.5	91.7	90.4	87.8	82.7	
160	71.4	77.8	80.7	82.4	85.4	85.7	85.4	86.9	87.8	90.2	89.5	89.4	88.1	85.7	79.9	
200	68.7	75.7	78.6	80.2	81.9	83.1	82.9	85.3	86.4	88.6	86.7	86.0	83.9	81.6	76.3	
250	71.8	80.1	84.2	90.1	87.8	84.2	83.9	82.9	84.2	89.8	86.0	88.9	84.3	82.2	75.9	
315	71.0	80.0	86.9	86.8	89.4	91.8	84.9	87.9	87.0	90.7	88.2	86.1	84.1	84.2	76.1	
400	66.1	73.5	78.1	78.4	81.7	84.2	81.8	83.3	84.4	85.6	84.7	84.4	82.8	79.9	72.8	
500	70.1	76.1	77.3	83.0	86.1	90.7	86.7	85.5	87.5	85.6	84.6	84.4	82.1	78.5	73.5	
630	67.9	75.3	83.2	84.2	83.2	80.4	84.2	84.5	86.2	83.1	83.8	83.2	81.9	80.5	71.7	
800	66.8	73.5	85.3	82.5	85.4	86.5	84.5	81.9	83.4	83.2	82.0	81.2	79.5	77.4	70.3	
1000	66.7	75.1	84.6	88.6	87.3	86.3	82.7	79.7	83.5	84.6	84.0	82.4	80.2	80.8	72.0	
1250	64.3	73.2	82.4	86.5	86.0	84.2	80.6	77.6	81.4	82.5	81.9	80.3	78.0	78.5	69.6	
1600	67.1	76.8	82.3	84.3	89.8	84.6	80.7	80.2	80.1	81.2	81.4	81.3	79.2	77.1	72.3	
2000	67.2	78.9	89.2	85.4	86.9	86.1	84.6	83.7	80.5	85.9	83.5	81.7	81.3	80.7	73.8	
2500	63.4	76.4	84.2	85.4	85.8	84.6	84.3	82.2	80.2	84.2	82.0	81.4	78.6	79.4	71.6	
3150	65.0	79.0	83.8	83.8	81.9	84.5	82.0	81.0	81.4	79.8	80.2	79.7	76.6	74.7	67.7	
4000	62.6	75.8	82.8	85.8	85.8	86.6	85.3	82.7	79.0	81.5	80.4	82.8	77.8	74.9	66.0	
5000	60.4	78.2	84.5	84.0	85.0	87.4	85.1	83.2	80.3	81.7	80.8	80.9	77.3	75.5	65.2	
6300	59.7	76.7	83.3	83.8	84.9	86.1	83.3	80.7	78.4	81.2	80.7	80.6	76.7	73.7	63.0	
8000	54.8	74.7	81.7	82.1	82.6	83.4	82.1	80.0	77.3	78.6	77.9	78.1	74.4	71.0	59.2	
10000	51.3	71.8	80.2	80.6	81.8	82.5	80.5	78.6	78.6	78.4	77.7	78.1	73.1	68.3	54.9	
OVERALL CALCULATED	81.0	90.1	96.8	98.1	98.9	99.4	97.2	97.4	97.7	99.8	98.8	98.4	96.6	95.1	89.5	
PND8	90.6	102.8	109.7	110.2	110.9	111.3	109.7	108.3	107.6	109.4	108.0	108.5	105.4	104.3	96.9	

Table A-VII.

FULLY TREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PHL
PRND	30.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	170.	
30.	78.2	77.1	74.2	77.2	78.0	78.2	79.7	80.6	81.2	83.3	82.6	84.1	86.6	92.9	96.9		135.3
63	73.9	74.2	78.0	77.7	78.3	77.5	79.0	80.1	81.0	82.9	82.4	84.5	87.1	92.5	96.2		134.9
80	73.8	75.6	76.9	79.1	79.4	78.9	80.0	80.6	81.6	83.6	83.2	85.3	87.8	91.6	93.9		134.3
100	80.6	77.4	76.2	79.1	80.0	79.8	80.5	86.7	81.3	83.3	82.8	84.6	86.5	89.8	90.2		133.1
125	76.5	78.3	79.7	77.9	79.4	78.9	78.9	79.4	80.6	84.1	82.2	84.7	86.1	89.4	90.8		132.9
160	77.6	80.9	83.0	77.3	78.6	79.0	79.7	80.7	83.8	87.6	84.8	88.3	90.3	94.2	94.4		136.4
200	75.9	78.0	79.4	80.3	80.6	80.8	82.9	84.4	85.8	88.3	88.9	91.9	94.1	96.7	95.2		138.9
250	82.0	84.0	86.2	87.6	86.9	87.6	87.7	89.5	89.9	93.6	92.8	95.3	96.7	97.6	95.9		142.0
315	85.4	87.1	89.5	90.9	89.2	92.3	88.7	93.0	91.6	99.0	96.3	99.9	98.8	97.9	96.8		145.1
400	85.1	85.8	86.0	86.0	85.4	87.0	86.9	87.5	89.9	92.3	91.2	91.0	91.7	92.3	90.9		139.3
500	83.2	85.6	86.4	86.4	85.8	84.8	85.2	86.1	87.5	90.5	90.3	92.4	92.4	92.9	90.7		138.9
630	89.7	92.7	94.0	93.4	93.3	93.1	92.9	93.0	93.1	94.0	92.0	92.7	92.3	93.6	91.0		143.1
800	89.7	91.1	94.6	92.3	95.4	97.9	95.6	94.5	96.6	90.0	89.8	91.9	91.8	95.1	90.5		144.4
1000	81.0	84.8	87.0	89.6	90.0	95.8	91.8	92.1	91.6	89.6	90.4	90.7	90.1	89.0	87.3		141.2
1250	81.3	82.3	85.4	90.7	90.2	88.5	85.1	86.6	88.1	88.0	88.6	89.3	90.5	87.8	88.8		138.4
1600	80.3	86.2	90.0	86.5	84.9	85.3	83.0	84.0	84.9	87.3	87.2	87.9	88.2	89.2	88.2		136.9
2000	80.4	84.7	89.3	83.7	90.0	85.5	85.9	82.9	85.3	87.9	87.5	88.5	88.6	88.6	86.1		137.5
2500	86.5	87.0	91.0	87.8	89.1	94.1	89.4	89.3	84.5	86.7	87.3	90.2	89.5	94.5	86.2		140.1
3150	82.3	87.1	93.0	89.3	91.1	89.0	87.3	86.5	84.1	85.5	84.7	87.2	87.3	87.7	85.5		138.8
4000	82.1	89.8	97.5	94.5	94.6	92.7	90.4	88.2	86.3	88.4	87.6	90.1	89.1	92.2	89.6		142.6
5000	82.2	89.6	94.9	91.4	90.9	90.5	85.0	87.3	83.9	86.6	86.1	86.8	86.0	87.1	85.1		139.9
6300	80.6	87.4	92.4	92.2	92.2	92.1	88.8	87.2	83.0	85.6	84.6	86.1	86.7	86.2	83.5		140.4
8000	78.3	89.1	92.9	90.6	90.8	91.1	87.3	85.8	83.9	85.8	86.3	86.7	86.0	87.3	83.5		140.4
10000	78.3	87.2	91.5	89.7	89.5	89.3	87.2	84.3	81.3	84.5	84.6	85.7	85.2	85.5	82.1		139.9
12500	75.8	86.2	90.2	87.5	87.2	87.0	84.5	82.6	80.3	82.4	82.8	84.5	83.9	83.8	80.7		139.3
16000	75.0	84.4	88.9	86.1	85.6	84.8	82.4	81.1	81.4	82.3	82.3	84.8	83.0	82.1	79.1		140.0
20000	72.9	81.4	86.2	83.2	82.6	82.2	80.3	78.8	80.8	81.4	81.5	83.4	81.9	80.1	76.3		140.5
OVERALL MEASURED	97.5	100.6	105.1	103.6	103.8	104.9	102.2	102.6	102.8	104.6	103.5	103.9	106.1	107.4	108.8		154.4
OVERALL CALCULATED	97.0	100.7	104.8	103.1	103.5	104.5	102.1	102.1	102.2	104.0	102.9	105.0	105.2	106.5	105.9		
PNDB	109.0	113.2	118.6	116.5	116.8	116.5	114.0	113.3	112.1	114.1	113.5	115.5	115.3	117.1	119.1		

Table A-VIII.
FULLY TREATED MOD II BLADES
SCALE MODEL - SCALED DATA
NOMINAL NOZZLE
200' SIDELINE
TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)															
90	70.5	71.0	71.9	76.4	78.3	78.8	79.9	80.2	80.7	82.3	81.1	81.8	82.2	83.2	80.0	
63	66.2	71.6	75.3	75.0	77.7	77.8	78.3	78.9	80.0	83.1	80.4	81.9	81.7	82.7	80.5	
80	67.0	74.1	78.5	74.4	76.8	78.0	79.0	80.2	82.3	86.5	83.0	85.4	85.8	87.4	83.9	
100	65.2	71.0	74.8	77.3	78.8	79.7	82.2	83.9	85.1	87.2	87.1	88.9	89.6	89.8	84.5	
125	71.1	77.0	81.6	84.6	85.0	86.5	87.0	88.9	89.2	92.4	90.9	92.3	92.1	90.6	85.0	
160	74.3	79.9	84.7	87.8	87.2	91.1	87.9	92.4	90.9	97.8	94.4	96.8	94.0	90.7	85.7	
200	73.8	78.5	81.2	82.8	83.5	85.7	86.1	86.9	89.1	91.1	89.2	87.9	86.8	85.0	79.5	
250	71.7	78.2	81.5	83.2	83.7	83.5	84.4	85.4	86.7	89.2	88.3	89.2	87.4	85.4	79.1	
315	77.9	85.1	89.0	90.1	91.2	91.8	92.0	92.3	92.3	92.7	89.9	89.4	87.3	86.0	79.3	
400	77.7	83.4	89.6	88.9	93.2	96.6	94.8	93.7	95.7	88.7	87.7	88.5	86.7	87.4	78.5	
500	68.8	74.9	81.8	86.2	87.8	94.4	90.9	91.3	90.7	88.2	88.2	87.3	85.0	81.2	75.2	
630	68.9	74.3	80.1	87.3	87.9	87.0	84.1	85.7	85.1	86.6	86.3	85.8	85.3	79.8	76.3	
800	67.6	78.0	84.6	83.0	82.6	83.9	82.0	83.1	83.9	85.8	84.9	84.4	82.8	81.0	75.5	
1000	67.4	76.4	83.8	80.1	87.6	84.0	84.8	82.0	84.3	86.4	85.2	84.8	83.1	80.3	73.1	
1250	73.2	78.5	85.4	84.1	86.7	92.6	88.4	88.4	83.5	85.1	84.9	86.5	83.9	83.1	72.8	
1600	70.7	78.4	87.3	85.5	88.7	90.4	86.2	86.2	83.0	84.0	82.7	84.3	81.7	80.7	71.8	
2000	68.2	81.0	91.7	90.8	92.2	91.2	89.3	87.3	85.3	86.9	85.2	86.4	83.4	83.4	75.6	
2500	67.7	80.5	89.0	87.6	88.4	88.9	83.9	86.3	82.8	85.0	83.6	82.9	80.1	78.0	70.7	
3150	65.7	78.1	86.4	88.3	89.8	90.6	87.8	86.4	82.0	84.1	82.2	84.3	80.7	76.9	68.6	
4000	62.7	79.5	86.8	86.8	88.4	89.7	86.4	85.1	83.0	84.4	83.9	82.8	79.9	77.7	67.8	
5000	62.7	78.0	85.8	86.3	87.6	88.4	86.9	84.2	81.0	83.6	82.7	82.3	79.5	76.2	66.5	
6300	59.2	74.6	84.5	84.3	85.7	86.5	84.7	82.9	80.4	81.9	81.3	81.3	78.2	74.2	64.0	
8000	56.9	74.4	83.4	83.3	84.6	85.0	83.3	82.2	82.3	82.6	81.4	82.0	77.4	72.1	61.0	
10000	52.6	70.7	80.7	80.9	82.4	83.2	82.1	80.8	82.6	82.5	81.2	81.1	76.3	69.4	56.0	
OVERALL CALCULATED	84.8	92.4	99.3	99.6	101.3	103.3	101.2	101.3	102.7	100.7	101.7	100.0	98.5	93.0		
PND8	93.2	104.3	112.2	112.2	113.8	115.0	112.6	112.0	110.8	111.6	110.5	110.9	108.3	106.7	99.3	

Table A-IX.

FULLY TREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

		MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	
		20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	PWL		
FREQ.		(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)			
50		72.4	68.8	68.4	68.5	69.0	67.7	69.4	70.4	71.8	71.7	71.4	72.0	73.6	76.0	78.8	121.4		
63		68.4	66.4	67.6	67.4	67.2	65.3	67.8	71.0	73.5	69.6	70.1	70.6	72.3	74.6	76.4	120.3		
80		68.0	69.1	70.2	70.4	71.4	72.3	70.6	71.0	71.2	71.5	72.2	73.6	72.7	74.5	75.0	121.6		
100		71.0	75.1	77.7	77.8	79.5	80.3	77.4	77.8	77.1	77.0	78.5	80.3	75.8	78.0	73.7	127.8		
125		66.9	65.2	66.6	66.7	66.9	66.2	66.2	66.7	66.5	67.4	68.4	68.9	69.3	72.9	71.8	117.8		
160		65.9	67.7	69.6	71.4	71.4	68.0	69.5	68.0	69.8	70.5	70.0	72.5	71.7	73.4	74.6	120.4		
200		69.2	73.5	79.2	82.0	82.2	77.7	78.9	75.9	77.6	79.7	77.6	80.7	77.3	77.9	77.5	128.9		
250		69.3	71.5	72.2	74.5	74.6	76.1	77.2	77.7	79.6	79.3	79.4	79.8	79.3	80.3	78.0	127.7		
315		71.7	73.2	73.9	75.5	77.7	77.7	77.2	78.5	79.7	80.3	80.3	80.7	79.9	79.9	76.5	128.5		
400		70.2	72.3	73.8	75.3	74.0	74.6	74.8	73.2	74.2	75.2	75.3	74.7	74.4	75.6	73.3	124.4		
500		69.7	71.1	71.1	71.0	70.5	70.2	71.0	70.3	72.6	72.3	72.6	73.6	73.5	73.5	72.2	121.9		
630		71.5	73.6	70.7	73.1	72.2	73.1	73.2	73.4	74.0	74.0	75.2	73.8	75.0	74.8	74.6	124.1		
800		68.3	70.5	71.2	69.7	70.6	70.2	70.8	71.1	71.5	72.0	73.3	73.7	73.6	73.6	72.3	122.0		
1000		67.8	69.4	70.0	70.6	71.6	70.8	71.4	71.6	72.1	72.5	73.7	74.2	73.3	72.3	70.6	122.2		
1250		67.8	70.6	71.5	71.3	69.4	69.8	68.8	69.2	70.4	70.9	72.5	73.3	73.2	71.7	70.2	121.3		
1600		66.9	69.9	72.8	69.3	68.9	68.4	67.0	66.7	68.0	68.9	70.5	71.6	71.8	71.0	70.4	120.1		
2000		66.9	72.9	75.2	72.6	71.5	70.3	68.1	67.8	67.1	68.9	69.3	71.3	71.8	73.4	72.2	121.5		
2500		79.5	86.4	86.2	89.7	82.6	80.6	77.5	77.5	75.6	74.7	77.8	77.9	81.1	84.7	83.4	132.3		
3150		65.4	71.9	74.2	70.6	67.1	68.6	65.6	66.6	66.6	67.9	68.7	68.2	68.9	70.5	68.9	119.6		
4000		67.8	73.1	74.7	73.2	71.3	70.0	68.1	66.7	67.3	67.9	69.1	73.3	73.2	74.1	70.6	122.1		
5000		70.4	80.7	82.9	80.6	76.0	74.1	70.5	69.4	71.9	71.8	71.2	75.0	78.2	76.1	73.4	127.6		
6300		67.7	74.4	76.8	75.4	72.1	70.0	68.5	67.4	67.1	69.1	71.9	73.8	77.2	73.6	78.1	124.1		
8000		67.6	77.8	79.2	77.9	78.2	78.3	68.9	67.9	69.9	71.0	72.7	75.7	76.7	74.5	70.4	126.7		
10000		65.8	75.9	77.7	75.6	73.7	70.4	68.3	66.2	66.8	69.0	71.4	73.0	73.8	73.1	68.8	125.4		
12500		63.5	74.9	75.9	73.5	72.4	67.5	66.4	64.4	65.2	67.0	69.2	70.9	71.9	71.1	67.0	124.7		
16000		60.7	72.6	74.4	72.0	70.6	66.7	65.0	63.7	65.9	66.0	67.6	70.1	70.6	69.1	66.1	125.3		
20000		59.8	70.4	72.1	70.0	68.4	65.5	64.0	62.5	66.0	65.4	66.2	68.8	70.0	67.5	64.8	126.3		
OVERALL MEASURED		86.6	92.2	93.3	92.7	91.4	87.9	88.9	88.7	89.5	89.9	90.5	91.6	91.7	92.6	91.0			
OVERALL CALCULATED		84.5	90.8	91.2	90.6	89.8	87.9	88.9	86.7	87.6	88.0	88.5	89.6	89.6	90.5	89.1	139.7		
PND8		98.6	104.9	105.3	104.5	102.2	100.7	98.7	98.5	98.2	98.3	100.0	100.9	102.5	104.1	102.5			

Table A-X.

FULLY TREATED MOD III BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)														
50	60.9	69.5	73.4	75.0	77.6	79.3	76.9	77.3	76.5	76.0	76.6	77.5	71.4	71.4	63.6
63	56.6	59.1	62.2	63.9	65.1	65.2	65.6	66.3	65.9	66.4	66.6	66.1	64.9	66.2	61.5
80	55.3	60.8	65.1	68.5	69.6	67.0	68.8	67.9	68.4	69.4	68.2	69.6	67.2	66.6	64.0
100	58.5	66.5	74.6	79.0	80.3	76.5	78.2	75.4	77.0	78.6	75.7	77.8	72.8	71.0	66.8
125	58.4	64.5	67.5	71.5	72.7	75.0	76.4	77.1	78.9	78.2	77.5	76.7	74.7	73.3	67.1
160	60.6	66.6	69.1	72.4	75.7	76.5	76.4	77.8	78.9	79.1	78.4	77.6	75.2	72.7	65.4
200	58.9	65.0	68.9	72.1	72.0	73.4	74.0	72.5	73.4	74.0	73.3	71.5	69.6	68.2	61.9
250	58.2	63.7	66.2	67.8	68.4	68.9	70.2	69.6	71.7	71.1	70.6	70.4	68.6	66.1	60.7
315	59.8	66.0	70.7	69.8	70.1	71.8	72.3	72.7	73.1	72.6	73.1	70.5	70.0	67.2	62.9
400	56.4	62.8	66.1	66.4	68.5	68.9	69.9	70.4	70.6	70.6	71.2	70.3	68.5	65.9	60.4
500	55.6	61.8	64.8	67.2	69.4	69.4	70.5	70.8	71.2	71.1	71.5	70.8	68.1	64.4	58.4
630	55.3	62.5	66.3	67.9	67.2	67.3	67.8	68.4	69.4	69.4	70.3	69.9	67.9	63.7	57.8
800	54.1	61.7	67.4	65.8	66.2	66.9	65.9	65.8	67.0	67.5	68.2	68.0	66.4	62.9	57.7
1000	56.9	64.5	69.7	69.0	69.1	68.6	67.1	66.9	66.0	67.3	66.9	67.6	66.3	65.1	59.2
1250	66.2	77.5	80.6	82.0	80.2	79.1	76.4	76.6	74.6	73.1	75.4	74.3	75.5	76.2	70.1
1600	51.7	62.4	68.5	66.9	64.7	65.3	64.5	65.6	65.6	66.3	66.2	64.4	63.2	61.8	55.2
2000	53.5	64.3	68.9	69.4	69.0	68.4	67.0	65.9	66.3	66.3	66.7	69.6	67.5	63.3	56.6
2500	54.0	71.7	77.0	76.7	73.5	72.6	69.4	68.5	70.8	70.2	68.7	71.2	72.3	67.0	58.9
3150	52.8	65.1	70.8	71.5	69.7	68.5	67.5	66.6	66.1	67.6	69.5	69.9	71.2	64.3	55.2
4000	52.0	68.2	73.1	74.1	73.8	71.9	68.0	67.2	69.1	69.5	70.4	71.9	70.6	64.9	54.8
5000	50.2	66.6	72.0	72.2	71.9	69.5	67.9	66.1	66.5	68.2	69.5	69.6	68.1	63.8	53.2
6300	46.8	64.3	70.2	70.3	70.9	67.1	66.5	64.7	65.3	66.5	67.7	67.7	66.2	61.5	50.4
8000	42.6	62.8	68.9	69.3	69.7	67.0	65.8	64.8	66.8	66.2	66.7	67.3	65.1	59.1	48.0
10000	39.3	59.7	66.6	67.7	68.1	66.6	65.8	64.6	67.8	66.5	65.9	66.5	64.5	56.8	44.5
OVERALL CALCULATED	71.6	81.5	85.7	87.1	87.1	86.5	85.9	85.8	86.4	86.5	86.2	86.2	84.1	82.2	76.1
PNCB	60.8	93.1	98.2	98.6	97.8	96.5	94.9	94.3	95.4	95.5	95.9	96.6	95.5	91.9	84.7

Table A-XI.

FULLY TREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

72% FAN SPEED

MODEL SOUND PRESSURE LEVELS (59 DEG. F., 70 PERCENT REL. HUM., DAY) 5 ANGLES FROM INLET IN DEGREES (AND RADIAN)																	
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		PWL
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.48)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()
50	70.5	72.6	71.6	72.5	72.6	71.7	74.1	75.1	75.8	76.7	77.3	78.5	80.7	84.4	87.9		127.9
63	72.7	70.0	73.7	76.7	74.9	71.9	73.9	74.9	76.6	76.1	77.2	78.1	80.2	83.6	86.8		127.6
80	69.5	70.2	71.2	72.1	72.0	71.5	73.6	74.7	75.4	76.3	77.3	78.4	80.2	82.7	84.5		126.6
100	72.4	74.6	73.6	74.2	74.6	74.1	75.0	75.3	75.6	75.9	77.2	78.0	79.1	80.8	81.5		126.3
125	70.1	72.1	74.6	75.9	78.1	74.3	75.1	75.1	76.2	74.9	78.8	76.8	78.9	80.0	81.6		126.7
160	68.6	68.8	70.2	69.6	70.2	69.5	71.5	72.6	73.9	75.6	76.8	79.3	80.7	83.1	84.4		126.5
200	69.9	71.0	72.6	73.0	73.9	73.8	76.0	77.5	78.5	80.1	82.0	83.6	85.2	87.0	86.8		130.5
250	75.2	76.6	78.4	79.4	79.8	78.7	80.9	82.2	83.2	84.1	85.6	86.2	87.4	88.3	87.1		133.5
315	77.3	78.5	80.2	80.0	82.2	81.8	82.3	83.2	83.7	85.3	86.1	87.0	86.9	87.0	85.3		134.1
400	76.1	78.4	79.1	78.2	78.7	78.5	79.6	79.8	80.8	82.0	82.7	83.3	82.9	82.8	81.5		130.8
500	75.0	76.3	75.8	75.2	74.9	74.7	75.5	76.4	78.1	79.3	80.4	81.7	82.0	82.0	81.1		128.6
630	74.2	77.7	78.6	78.3	78.9	79.8	80.2	80.6	81.6	81.7	82.7	82.3	82.8	83.0	81.0		131.0
800	72.9	75.3	76.3	75.6	77.0	76.9	77.6	78.3	79.4	79.7	80.9	81.7	81.5	81.3	79.3		129.2
1000	75.4	77.0	76.8	77.1	78.0	78.0	78.7	79.5	80.1	80.5	82.0	82.2	81.7	80.7	78.7		130.0
1250	72.4	76.5	77.8	79.0	76.8	76.3	75.9	77.0	78.1	78.6	80.4	81.4	80.7	79.9	77.4		128.8
1600	72.3	73.1	76.0	75.3	74.6	74.9	74.3	74.8	76.1	76.8	78.6	79.3	79.2	78.2	77.2		127.0
2000	72.9	74.7	79.7	77.0	76.7	76.0	74.4	73.3	74.5	76.6	76.7	78.9	77.9	77.9	77.0		127.1
2500	74.1	81.7	85.8	87.2	78.3	77.0	77.0	76.4	76.0	77.9	78.2	79.8	79.1	79.1	77.8		131.2
3150	82.5	94.8	100.0	101.9	87.7	86.2	89.1	88.6	85.9	89.9	84.8	87.5	85.0	85.7	86.4		144.3
4000	75.6	78.7	81.6	82.5	80.0	77.9	75.8	74.2	75.1	75.9	76.6	80.2	78.8	81.8	77.6		129.7
5000	72.4	81.0	84.7	81.5	78.8	76.8	73.9	73.8	75.4	76.2	76.2	79.4	78.6	79.0	76.5		129.7
6300	77.5	84.8	88.9	88.5	84.6	82.7	83.0	80.6	75.9	81.5	81.8	83.7	83.4	84.3	81.0		135.5
8000	71.9	83.2	84.7	82.8	81.5	78.3	75.7	74.9	75.6	76.9	78.8	80.6	79.4	79.3	76.4		131.9
10000	72.0	83.2	85.6	83.5	81.2	78.1	77.2	75.1	77.4	80.2	81.1	79.7	80.0	77.0			133.2
12500	69.9	81.8	83.8	81.5	80.9	76.6	75.9	73.8	74.2	75.8	77.8	79.1	77.7	78.8	75.2		132.8
16000	67.0	80.2	82.2	80.2	79.4	75.5	74.4	72.4	73.5	74.7	76.3	77.8	76.1	76.1	73.8		133.3
20000	65.2	77.3	79.6	78.0	77.3	73.7	73.3	70.2	72.9	74.2	75.2	77.0	75.9	74.2	72.0		134.2
OVERALL MEASURED	90.6	98.1	102.7	103.9	95.4	94.2	95.1	94.5	95.0	96.4	96.6	97.4	97.5	98.2	97.2		
OVERALL CALCULATED	89.0	97.0	101.3	102.7	94.0	92.5	93.5	92.8	93.1	95.0	95.0	96.2	96.2	97.1	96.9		147.7
PWDB	103.2	112.1	116.4	117.6	108.2	106.8	108.2	109.8	106.7	109.4	107.5	109.5	108.3	109.0	108.6		

Table A-XII.

FULLY TREATED MOD III BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM, DAY)															
50	62.3	68.0	69.3	71.4	72.9	73.1	74.4	74.9	75.0	74.9	75.5	75.2	74.8	74.3	71.4	
63	65.8	65.4	70.2	73.1	76.4	73.3	74.5	74.6	75.6	73.9	77.0	74.0	74.5	73.3	71.2	
80	58.1	62.0	65.7	66.6	68.4	68.4	70.8	72.1	73.2	74.5	75.0	76.4	76.2	76.3	73.9	
100	59.2	64.1	68.0	70.1	72.0	72.6	75.3	77.0	77.9	79.0	80.1	80.6	80.6	80.0	76.1	
125	64.3	69.6	73.8	76.4	77.9	77.5	80.2	81.6	82.5	82.9	83.7	83.2	82.8	81.2	76.2	
160	68.2	71.3	75.4	76.9	80.3	80.6	81.5	82.6	82.9	84.1	84.2	84.0	82.1	79.8	74.2	
200	64.8	71.1	74.2	75.1	76.7	77.2	78.8	79.1	80.0	80.7	80.7	80.2	78.0	75.5	70.2	
250	63.5	68.9	70.9	72.0	72.8	73.4	74.6	75.7	77.3	78.0	78.3	78.5	77.1	74.5	69.6	
315	62.4	70.1	73.6	75.0	76.8	78.4	79.3	79.9	80.7	80.4	80.6	79.1	77.8	75.5	69.3	
400	61.0	67.6	71.2	72.2	74.9	75.6	76.7	77.5	78.5	78.4	78.8	78.4	76.4	73.6	67.3	
500	63.2	69.1	71.6	73.6	75.8	76.6	77.8	78.7	79.1	79.1	79.8	78.8	76.5	72.9	66.5	
630	59.9	68.5	72.6	75.5	74.5	74.9	75.0	76.2	77.1	77.2	78.2	77.9	75.4	71.9	64.9	
800	59.5	65.0	70.7	71.7	72.3	73.4	73.3	74.0	75.1	75.3	76.3	75.8	73.8	70.0	64.4	
1000	59.9	66.4	74.2	73.3	74.3	74.5	73.4	72.4	73.4	75.0	74.3	75.3	72.4	69.6	63.9	
1250	60.8	73.2	80.2	83.5	75.9	75.4	75.9	75.5	75.0	76.4	75.8	76.1	73.5	70.6	64.5	
1600	68.8	86.2	94.3	98.2	85.3	84.6	88.0	85.6	84.9	88.3	82.4	83.7	79.3	77.0	72.7	
2000	61.8	69.9	75.9	78.7	77.6	76.4	74.8	73.3	74.1	74.4	74.2	76.5	73.1	73.0	63.6	
2500	58.0	71.9	78.8	77.6	76.3	75.2	72.9	72.9	74.3	74.6	73.8	75.5	72.7	69.9	62.1	
3150	62.6	75.6	82.9	84.7	82.1	81.2	82.0	79.8	74.9	79.9	79.3	79.9	77.4	75.0	66.1	
4000	56.3	73.6	78.6	79.0	76.9	76.9	74.8	74.2	74.7	75.4	76.4	76.7	73.2	69.7	60.7	
5000	56.4	73.9	79.9	80.1	79.3	77.3	76.9	74.9	74.8	76.5	78.3	77.7	74.0	70.8	61.4	
6300	53.2	72.1	78.2	78.4	79.4	76.2	76.0	74.1	74.3	75.3	76.2	75.9	72.1	69.2	58.6	
8000	48.9	70.2	76.7	77.4	78.5	75.8	75.3	73.4	74.4	74.9	75.3	75.0	70.5	66.1	55.7	
10000	44.9	66.6	74.1	75.7	77.0	74.8	75.1	72.3	74.7	75.3	74.9	74.7	70.4	63.5	51.7	
OVERALL CALCULATED	76.1	88.3	95.6	99.0	91.8	91.1	92.5	91.9	92.1	93.5	92.8	92.7	90.8	88.8	83.8	
PNDB	86.8	101.2	108.2	110.9	105.0	104.0	105.0	103.7	103.5	105.6	104.0	104.3	101.7	99.2	92.1	

Table A-XIII.

FULLY TREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PWL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	(()
50	77.7	75.9	74.4	76.2	76.4	75.6	78.4	79.3	80.6	81.8	82.4	83.6	86.5	90.9	94.9		133.8
63	73.5	73.5	75.4	75.7	76.8	75.5	78.1	79.3	81.5	81.3	81.9	83.4	86.5	90.7	94.5		133.6
80	73.3	74.6	75.4	76.8	76.8	76.4	78.4	79.4	80.4	81.6	82.9	84.2	86.6	89.7	91.9		132.8
100	75.4	75.3	76.3	77.8	78.2	77.8	78.8	79.4	80.1	81.2	81.8	83.6	85.4	87.7	88.0		131.5
125	81.0	75.7	79.9	82.6	82.5	80.4	76.7	82.7	77.8	82.6	81.2	86.1	85.1	86.5	88.5		132.6
160	74.5	73.7	74.9	76.1	76.5	75.4	76.6	78.2	78.9	81.3	82.9	85.8	87.8	90.7	91.5		133.2
200	74.0	75.4	77.3	78.2	78.3	78.4	81.2	82.4	83.6	85.7	87.3	89.5	92.0	94.0	93.1		136.7
250	79.2	80.7	82.7	83.9	84.6	83.4	85.5	86.6	87.1	90.4	90.6	92.0	93.7	94.7	93.6		139.1
315	82.2	83.8	84.5	84.5	86.0	84.9	85.5	86.4	87.5	89.4	90.1	91.5	92.6	93.0	91.6		138.6
400	80.2	83.1	84.4	82.2	82.2	83.6	82.9	83.9	84.7	85.7	86.5	87.6	88.8	88.9	87.9		135.4
500	77.4	78.9	80.1	81.8	80.8	80.0	82.0	82.1	82.9	84.6	86.0	88.0	88.8	88.5	87.7		134.6
630	79.7	82.4	87.5	84.5	84.9	87.7	88.8	87.5	89.7	88.3	89.2	88.5	89.6	89.2	87.6		138.1
800	78.3	81.7	82.5	83.0	84.1	82.6	83.9	85.0	85.3	86.5	87.6	88.7	88.8	87.7	85.8		135.8
1000	79.5	82.4	83.8	83.2	83.1	82.7	83.8	84.4	85.3	86.4	87.6	88.1	87.8	86.4	84.6		135.5
1250	78.9	80.6	81.6	84.5	83.3	82.8	82.4	82.9	84.7	84.6	86.4	87.4	86.9	85.5	83.4		134.7
1600	77.4	78.6	82.6	84.7	82.0	83.8	81.5	80.8	82.4	83.2	85.0	85.5	85.1	84.2	82.4		133.7
2000	78.1	78.8	83.3	82.1	80.6	81.7	78.6	78.9	80.1	82.3	82.6	84.8	83.5	82.9	83.1		132.3
2500	75.7	80.8	82.7	82.0	81.4	79.4	79.8	80.0	80.5	81.8	83.1	84.7	83.8	83.2	81.8		132.4
3150	82.7	87.7	93.9	91.5	88.0	89.6	86.6	83.6	83.9	86.9	86.4	85.4	87.7	90.4	86.6		139.1
4000	81.9	85.8	92.2	90.5	89.2	89.1	86.2	83.1	82.9	84.9	84.9	86.7	86.6	89.5	85.8		138.5
5000	76.0	83.9	88.6	86.8	86.5	86.6	83.2	82.6	82.0	82.0	81.7	83.9	82.9	82.7	80.2		135.5
6300	79.0	88.2	90.1	90.1	87.8	87.4	88.1	84.8	82.2	83.3	85.5	86.7	85.1	86.1	83.0		138.3
8000	77.3	88.4	89.8	88.6	88.9	86.7	85.9	84.4	82.9	82.7	83.6	86.0	84.4	84.4	81.8		136.2
10000	75.9	86.2	88.6	87.1	86.2	83.9	84.1	81.6	80.7	82.0	83.5	85.3	83.8	83.8	80.7		137.4
12500	73.2	84.3	86.5	85.1	85.1	82.1	82.6	79.9	79.5	80.1	81.7	82.4	81.1	81.9	78.9		136.7
16000	70.8	82.7	84.8	82.9	82.7	79.9	79.8	77.7	78.5	78.9	80.5	81.3	79.3	79.4	77.0		136.8
20000	69.2	79.7	82.1	80.6	80.1	77.4	78.1	75.4	77.7	78.2	78.9	80.2	78.6	77.0	75.0		137.4
OVERALL MEASURED	94.7	99.4	102.5	101.4	100.5	100.2	99.8	99.3	99.9	101.1	102.0	103.3	104.1	105.0	104.4		
OVERALL CALCULATED	92.6	97.2	100.5	99.4	98.5	98.2	97.8	97.2	97.8	99.0	99.9	101.2	102.0	103.2	103.2		150.6
PND8	105.8	110.2	114.6	113.2	111.8	113.8	110.3	108.9	109.1	111.0	111.4	112.4	112.9	114.4	112.1		

Table A-XIV.

FULLY TREATED MOD III BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)														
50	65.3	68.7	71.9	75.0	76.5	76.8	78.2	78.9	79.6	80.2	80.1	80.8	81.1	81.1	77.9
63	70.7	69.0	75.5	79.8	80.7	79.3	76.1	82.2	77.2	81.6	79.5	83.2	80.7	79.8	78.2
80	63.9	66.8	70.5	73.2	74.7	74.4	76.0	77.7	78.2	80.2	81.1	82.9	83.3	83.9	81.0
100	63.3	68.5	72.7	75.2	76.5	77.5	80.5	81.9	82.9	84.6	85.4	86.6	87.4	87.1	82.4
125	68.3	73.6	78.0	80.9	82.7	82.2	84.8	86.0	86.4	89.3	88.7	89.0	89.0	87.7	82.7
160	71.1	76.6	79.8	81.4	84.1	83.7	84.7	85.8	86.7	88.2	88.1	88.4	87.9	85.8	80.5
200	65.0	75.8	79.6	79.1	80.2	82.3	82.1	83.3	83.9	84.4	84.5	84.5	83.9	81.6	76.6
250	65.9	71.5	75.2	78.6	78.8	78.7	81.2	81.4	82.0	83.3	84.0	84.8	83.9	81.1	76.2
315	68.0	75.2	82.5	81.2	82.8	86.4	87.9	86.8	88.9	87.0	87.1	85.3	84.6	81.7	75.9
400	66.4	74.8	77.5	79.6	81.9	81.3	83.0	84.2	84.4	85.1	85.5	85.4	83.7	80.0	73.8
500	67.3	74.5	77.8	79.8	80.9	84.3	82.8	83.6	84.3	85.0	85.4	84.6	82.6	78.5	72.4
630	66.4	72.5	76.3	81.1	81.0	80.6	81.4	82.1	83.7	83.2	84.2	83.9	81.6	77.5	70.9
800	64.7	70.8	77.2	81.1	79.7	82.3	80.5	80.0	81.4	81.7	82.7	82.0	79.7	76.0	69.7
1000	65.0	70.8	77.8	78.5	78.4	80.2	77.5	77.9	79.0	80.8	80.3	81.2	78.0	74.6	70.1
1250	62.6	68.2	75.6	76.4	76.3	78.1	75.4	75.8	76.9	78.7	78.1	79.0	75.8	72.3	67.7
1600	61.9	71.2	76.8	78.1	78.8	77.7	78.5	78.9	79.3	80.1	80.6	80.9	78.0	74.4	67.9
2000	68.4	78.7	87.9	87.5	85.4	87.9	85.3	82.7	82.6	85.2	83.8	81.5	81.6	81.4	72.3
2500	67.3	76.6	86.2	86.5	86.5	87.4	85.0	82.0	81.7	83.2	82.2	82.7	80.5	80.3	71.3
3150	60.7	74.2	82.2	82.6	83.7	85.7	81.8	81.3	80.7	80.1	78.9	79.7	76.5	73.0	64.9
4000	62.7	78.0	83.4	85.6	84.5	85.4	86.6	83.5	80.7	81.3	82.6	82.2	78.4	75.9	66.7
5000	60.9	78.3	83.4	84.4	86.2	85.0	84.8	83.4	81.7	81.0	81.0	81.8	77.9	74.3	65.4
6300	58.1	75.4	81.8	82.7	83.5	82.8	83.0	80.7	79.6	80.3	80.8	80.9	76.1	73.0	62.9
8000	53.2	72.3	79.0	80.3	82.2	80.4	81.5	79.1	78.4	78.3	78.8	77.6	73.6	69.9	58.8
10000	47.7	69.4	76.7	78.1	79.9	76.4	79.0	77.1	77.7	77.4	77.7	76.4	71.2	66.1	54.1
OVERALL CALCULATED	79.9	88.0	94.5	95.5	96.0	96.6	96.6	96.2	96.6	97.5	97.5	97.6	96.6	94.9	89.9
PND8	90.3	101.2	107.9	108.8	109.2	109.7	109.7	108.1	107.1	108.1	108.2	108.1	105.8	104.0	96.5

Table A-XV.

FULLY TREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODEL SOUND PRESSURE LEVELS (59 DEG. D. 70 PERCENT REL. HUM; DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)		20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	PWL
FREQ.		(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()
30	79.2	77.3	75.8	74.4	73.5	72.8	72.2	71.8	71.5	71.2	71.0	70.8	70.6	70.4	70.2	70.0	136.8
63	74.7	74.7	74.5	74.0	73.8	73.3	72.8	72.4	72.1	71.8	71.5	71.2	71.0	70.8	70.6	70.4	135.5
80	75.4	75.7	76.7	78.0	78.9	79.2	79.6	80.3	81.0	82.0	83.5	84.8	86.0	86.6	87.2	87.8	135.2
100	77.2	79.4	78.1	80.5	80.4	80.5	81.3	81.4	82.2	82.8	83.6	85.1	87.4	90.4	90.9	91.8	133.8
125	77.7	77.2	79.5	78.0	80.2	78.2	79.1	81.2	82.0	83.6	84.0	85.8	86.8	89.7	91.8	91.8	133.7
160	80.9	78.5	83.3	77.7	83.1	78.2	80.4	85.4	86.1	88.1	87.3	89.8	90.4	94.3	95.1	95.1	137.4
200	76.4	77.8	79.7	80.1	80.7	80.6	83.1	84.2	85.7	87.6	89.7	92.1	94.6	97.0	96.3	96.3	139.3
250	81.9	82.7	85.0	85.7	85.7	84.9	86.9	87.6	89.2	90.4	92.0	94.0	96.1	97.5	96.5	96.5	141.1
315	85.4	85.7	86.7	86.5	88.5	87.6	89.7	88.3	91.6	91.5	92.2	93.7	94.8	95.5	94.2	94.2	141.1
400	81.7	84.0	84.5	83.3	84.6	83.6	84.4	85.0	86.0	86.8	88.2	89.3	90.7	91.3	89.6	89.6	136.9
500	79.2	80.7	81.2	80.4	81.5	81.0	82.3	83.1	85.0	86.5	88.3	90.3	91.3	91.5	90.2	90.2	136.6
630	80.9	83.5	85.0	84.1	86.6	86.3	88.0	88.2	89.7	89.8	90.9	90.7	91.7	91.8	89.8	89.8	139.0
800	80.9	83.2	84.0	82.5	86.2	85.3	86.3	86.7	88.4	88.3	90.6	91.1	91.2	90.4	88.3	88.3	138.2
1000	80.8	84.3	82.8	85.2	86.8	87.1	87.2	87.3	88.2	88.4	90.1	90.9	90.5	89.3	87.5	87.5	138.3
1250	80.0	82.3	82.7	83.5	84.1	83.2	84.3	85.3	86.4	86.9	89.1	89.8	89.5	88.0	86.3	86.3	136.7
1600	76.8	78.4	81.8	81.4	82.5	82.6	82.2	83.3	84.5	85.3	87.3	88.1	87.6	86.0	84.7	84.7	135.0
2000	76.9	77.7	82.6	80.6	82.1	82.5	81.1	80.7	82.6	84.6	85.4	87.4	85.9	84.9	84.1	84.1	134.0
2500	76.7	79.7	83.1	83.0	84.7	81.7	82.0	82.2	82.6	83.1	85.0	87.4	86.4	85.2	83.9	83.9	134.5
3150	79.3	83.9	92.3	88.0	90.0	90.1	87.5	86.1	84.4	85.5	86.6	85.8	86.0	86.2	85.3	85.3	138.4
4000	87.7	90.8	102.8	99.1	102.0	99.6	97.6	93.0	89.6	89.2	89.6	92.1	93.7	94.1	93.4	93.4	148.1
5000	76.7	84.8	88.4	89.9	90.8	90.0	87.7	85.2	85.0	83.7	84.4	86.3	85.5	83.9	81.4	81.4	138.3
6300	78.5	85.6	89.3	89.6	89.6	88.3	88.1	84.6	82.6	83.6	85.8	86.6	85.7	85.9	83.0	83.0	139.4
8000	79.7	89.4	92.4	92.4	94.4	91.8	89.2	87.8	86.3	86.0	86.3	89.1	88.6	86.6	83.6	83.6	141.9
10000	76.0	85.3	88.5	87.1	88.7	85.0	85.1	82.9	81.9	82.8	84.6	85.3	84.4	84.4	80.8	80.8	138.1
12500	73.9	83.6	87.2	86.3	88.7	84.2	84.6	82.4	81.2	82.1	83.9	84.3	83.1	82.7	79.3	79.3	136.6
16000	71.4	82.2	85.5	84.0	85.4	82.3	82.2	80.0	80.2	81.3	82.5	82.6	81.4	80.6	77.9	77.9	135.5
20000	71.4	79.7	83.0	81.7	82.6	80.6	80.7	78.7	81.4	80.9	81.8	82.3	80.9	78.6	76.7	76.7	135.7
OVERALL MEASURED		94.4	99.4	106.3	106.0	106.1	104.5	103.2	101.8	102.2	102.8	104.1	105.4	106.5	107.6	107.3	
OVERALL CALCULATED		94.4	97.9	104.6	102.3	104.5	102.6	101.9	99.9	100.3	100.8	102.1	103.9	104.4	105.7	106.0	193.6
PNDB		108.4	111.6	119.9	117.4	119.7	117.6	116.6	114.0	112.8	112.9	113.9	115.7	116.5	116.9	116.1	

Table A-XVI.

FULLY TREATED MOD III BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)															
50	67.1	72.9	73.7	77.7	78.7	79.5	80.7	81.0	81.6	81.9	81.9	82.3	83.1	83.8	80.7	
63	67.4	70.5	75.1	75.2	78.4	77.1	78.5	80.7	81.4	82.5	82.3	83.0	82.4	83.0	81.5	
80	70.4	71.7	78.8	74.8	81.3	77.1	79.7	84.9	85.4	87.1	85.5	86.9	85.9	87.5	84.6	
100	65.7	70.8	75.2	77.1	78.9	79.5	82.4	83.6	85.0	86.4	87.9	89.2	90.0	90.1	85.6	
125	71.0	75.4	80.4	82.7	83.8	83.7	86.2	87.0	88.4	89.2	90.1	91.0	91.5	90.4	85.6	
160	74.3	78.5	82.0	83.4	86.5	86.4	88.9	87.6	90.9	90.3	90.3	90.6	90.1	88.3	83.1	
200	70.4	76.7	79.7	80.1	82.6	82.4	83.8	84.4	85.2	85.6	86.2	86.2	85.9	84.0	76.3	
250	67.7	73.2	76.3	77.2	79.5	79.7	81.5	82.4	84.2	85.2	86.2	87.0	86.4	84.0	78.7	
315	69.1	75.9	80.0	80.8	84.5	85.0	87.1	87.4	88.9	88.5	88.9	87.5	86.7	84.2	78.1	
400	68.9	75.5	79.0	79.2	84.0	83.9	85.4	86.0	87.7	87.0	88.5	87.7	86.1	82.7	76.4	
500	68.6	76.0	77.7	81.8	84.6	85.7	86.2	86.5	87.2	87.0	88.0	87.5	85.3	81.5	75.3	
630	67.5	74.4	77.4	80.1	81.9	81.6	83.3	84.5	85.4	85.5	86.9	86.3	84.2	80.0	73.9	
800	64.1	70.3	76.4	77.8	80.2	81.1	81.2	82.4	83.5	83.8	85.0	84.5	82.2	77.8	72.0	
1000	63.9	69.4	77.1	77.0	79.8	81.0	80.0	79.8	81.5	83.1	83.0	83.8	80.4	76.6	71.0	
1250	63.4	71.2	77.5	79.3	82.3	80.1	80.9	81.3	81.5	81.6	83.4	83.7	80.8	76.7	70.6	
1600	65.6	75.2	86.6	85.0	87.5	88.5	86.4	85.2	83.3	83.9	84.2	82.0	80.3	77.5	71.6	
2000	73.7	82.0	97.1	95.3	99.6	98.1	96.5	92.1	88.8	87.7	87.2	88.4	87.9	85.3	79.4	
2500	62.3	75.8	82.5	86.1	88.3	88.4	86.7	84.2	83.9	82.1	81.9	82.4	79.6	74.8	67.0	
3150	63.6	76.3	83.3	85.8	87.1	86.6	87.1	83.8	81.6	82.1	83.4	82.7	79.7	76.6	68.0	
4000	64.0	79.8	86.3	88.5	92.1	90.3	88.3	87.2	85.5	84.6	84.0	85.2	80.5	77.0	68.0	
5000	60.4	76.0	82.8	83.7	86.9	84.1	84.7	82.8	81.6	82.0	82.8	81.9	78.7	75.1	65.2	
6300	57.2	74.0	81.5	83.1	87.2	83.7	84.7	82.7	81.3	81.6	82.4	81.1	77.4	73.1	62.6	
8000	53.3	72.2	79.9	81.2	84.5	82.5	83.1	81.1	81.6	81.6	79.9	75.9	70.6	59.8		
10000	51.0	69.0	77.5	79.4	82.4	81.7	82.5	80.8	83.2	82.0	81.6	80.0	75.4	67.9	56.4	
OVERALL CALCULATED	81.9	89.4	98.9	98.6	102.2	101.1	100.6	99.0	99.3	99.3	99.8	100.0	99.1	97.6	92.9	
PNDG	92.8	102.5	112.8	112.6	116.2	115.1	114.4	111.9	110.7	110.3	110.4	110.7	109.2	106.3	100.0	

Table A-XVII.

FULLY TREATED MOD VII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

MODEL	SOUND PRESSURE LEVELS (59 DB, 77.90 PERCENT REL. HUM, DAY)															ANGLES FROM INLET IN DEGREES (AND RADIAN)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Table A-XVIII.
FULLY TREATED MOD VII BLADES
SCALE MODEL - SCALED DATA
NOMINAL NOZZLE
200' SIDELINE
APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F. 70 PERCENT REL. HUM. DAY)														
50	62.4	62.6	65.5	66.7	70.1	71.7	70.5	71.2	71.5	69.9	70.2	68.9	68.4	66.3	65.6
63	52.9	55.5	58.9	61.1	63.6	64.2	63.6	64.4	64.7	65.3	66.4	65.4	64.8	63.8	59.8
80	51.0	55.3	58.4	58.6	62.2	62.7	64.3	64.3	64.3	64.6	66.1	65.8	66.4	65.3	63.2
100	54.0	61.5	61.3	61.8	63.4	67.8	67.6	68.3	70.4	70.9	71.5	70.2	70.3	69.4	67.0
125	54.0	57.2	62.5	65.5	67.1	69.0	70.2	72.5	73.5	72.8	74.1	73.0	72.2	70.3	66.2
160	55.9	62.0	65.3	69.5	72.1	73.7	71.5	74.5	75.3	74.2	75.1	73.8	72.5	69.9	65.1
200	55.7	62.1	65.1	66.4	69.3	69.9	70.1	70.1	70.5	69.7	71.3	69.7	69.2	67.0	60.8
250	55.1	59.6	61.9	64.3	62.8	65.5	64.9	65.9	67.0	66.8	68.8	67.8	67.1	64.7	59.5
315	53.3	58.9	63.3	64.5	66.1	68.0	68.2	69.2	70.3	69.1	70.3	68.7	68.2	65.7	60.5
400	52.0	58.4	61.9	61.2	65.2	67.9	67.4	67.4	68.4	67.7	69.0	67.5	66.1	64.4	59.0
500	50.7	57.6	60.8	62.6	65.0	66.9	67.2	68.2	68.2	67.8	69.0	68.6	66.8	63.7	57.9
630	51.5	57.3	60.8	63.1	63.7	65.5	66.0	65.8	66.9	66.5	68.8	67.6	66.5	62.1	56.7
800	51.0	57.2	61.9	62.2	63.0	65.5	63.9	65.9	65.2	65.8	67.9	66.7	64.8	62.0	56.5
1000	52.9	60.4	65.0	66.2	65.2	66.7	64.1	64.1	65.1	65.8	68.0	65.5	64.6	62.3	57.4
1250	63.6	73.6	79.3	79.8	76.5	79.2	76.1	74.8	73.9	72.7	76.6	75.0	75.1	74.5	69.5
1600	50.6	62.1	67.9	66.2	65.9	65.9	64.4	64.0	64.2	63.6	66.0	66.7	63.5	63.0	55.5
2000	50.8	60.4	66.2	65.1	63.5	66.6	62.8	64.8	66.1	65.7	65.6	65.3	66.0	63.4	57.1
2500	55.6	71.7	74.4	74.1	72.9	72.6	73.5	69.5	69.2	68.9	73.2	72.3	70.2	70.5	62.8
3150	51.3	63.5	70.3	70.4	68.2	68.7	66.3	66.4	66.5	67.8	69.1	70.5	71.2	65.1	56.3
4000	50.4	67.8	74.0	71.9	71.1	71.7	69.3	68.6	69.6	70.0	74.2	74.2	72.0	68.7	59.4
5000	49.1	65.7	73.1	71.0	70.0	70.1	68.7	67.7	68.5	68.9	72.3	72.3	69.1	65.9	57.1
6300	45.3	62.9	69.9	68.8	67.9	67.8	66.4	63.5	66.3	65.8	70.0	69.0	66.5	61.7	53.8
8000	40.2	59.8	67.1	66.5	68.0	66.0	64.7	62.4	64.7	65.0	67.7	66.9	64.2	58.7	48.4
10000	36.0	55.0	63.2	62.8	63.2	63.6	61.2	59.2	62.5	62.6	64.4	64.0	60.8	53.0	40.9
OVERALL CALCULATED	69.0	78.4	83.5	83.5	82.6	84.1	82.6	82.6	83.2	82.7	84.8	83.9	82.9	80.8	75.9
PNOB	78.1	91.4	96.0	95.5	94.9	95.5	94.9	93.3	94.1	94.2	97.2	96.8	95.1	92.4	85.3

Table A-XIX.

FULLY TREATED MOD VII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

72% FAN SPEED

MODEL SOUND PRESSURE LEVELS (59 DEG. F., 70 PERCENT REL. HUM., DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PNL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	
50	76.4	73.1	70.8	72.5	71.7	73.6	73.6	74.5	75.6	75.8	76.9	77.6	80.6	84.8	87.8		128.0
63	71.7	72.3	70.1	71.6	72.2	72.1	71.9	74.0	76.1	75.1	77.2	77.9	81.2	84.3	86.9		127.6
80	68.4	68.6	68.6	70.3	70.4	71.6	72.4	73.5	74.7	74.6	76.7	77.4	80.4	82.8	84.7		126.4
100	69.5	69.8	68.9	72.3	72.0	72.9	73.6	73.6	74.8	74.9	76.0	76.8	79.0	81.1	81.8		125.5
125	70.0	73.1	71.0	71.8	72.3	72.9	77.1	79.2	78.3	80.4	82.1	80.0	80.0	80.2	80.0		126.3
160	67.5	67.1	67.9	67.6	68.7	69.6	69.7	70.6	71.7	72.7	75.8	77.7	79.7	82.9	83.7		125.6
200	67.9	68.3	69.1	70.8	71.0	71.9	72.8	75.0	77.2	78.2	81.1	82.2	84.9	87.1	87.2		130.0
250	73.6	73.0	74.0	77.6	77.2	76.0	78.2	79.8	82.2	83.2	84.0	84.8	86.1	87.0	87.1		132.2
315	74.7	76.1	77.2	78.0	79.1	79.0	78.0	80.1	81.2	81.3	83.1	84.0	84.9	86.1	84.0		131.6
400	75.9	78.4	79.0	77.8	80.0	81.1	77.9	78.0	82.0	79.0	80.0	80.1	81.8	81.4	80.9		130.1
500	71.5	74.9	73.7	72.3	74.0	73.9	73.0	76.6	76.0	77.9	80.9	80.7	82.7	81.9	81.0		128.2
630	71.8	74.2	73.2	75.9	75.0	76.2	75.9	78.0	79.4	79.4	80.4	80.0	82.0	82.2	80.1		128.8
800	72.0	74.3	74.9	73.5	75.0	75.8	76.2	75.8	77.2	78.0	80.4	79.9	80.2	81.1	79.2		128.0
1000	71.1	73.2	73.3	73.9	76.1	76.0	76.0	77.2	78.0	78.4	80.2	80.3	80.1	79.5	77.0		128.0
1250	74.9	76.0	78.9	79.9	77.3	75.8	76.1	75.9	77.1	78.0	81.0	81.1	80.8	80.0	80.1		129.1
1600	75.0	77.3	78.3	80.7	77.1	78.0	75.2	76.1	76.2	77.1	80.2	80.2	79.0	79.4	80.3		128.8
2000	75.9	78.9	83.3	77.2	76.2	78.2	74.3	77.0	76.4	76.2	80.3	78.2	79.4	80.3	82.2		129.2
2500	72.6	76.2	80.2	79.8	75.9	76.0	74.0	73.6	73.8	75.0	77.9	78.0	78.0	79.0	77.8		127.7
3150	81.0	91.4	95.5	96.2	86.6	85.4	85.5	87.2	82.6	84.3	83.6	90.1	84.1	90.3	86.4		140.5
4000	72.7	79.2	83.0	82.9	78.0	79.9	75.8	75.7	76.1	76.9	78.0	78.8	79.1	82.3	80.9		130.4
5000	74.9	83.8	86.2	85.2	80.4	82.2	80.3	76.3	75.2	76.2	81.6	81.4	80.5	84.6	83.2		133.0
6300	76.2	84.8	90.2	88.8	84.3	84.2	80.5	79.4	78.3	79.6	82.3	85.2	87.5	87.7	83.5		136.5
8000	71.9	86.6	87.2	82.9	80.2	81.1	79.2	76.9	77.1	78.4	82.2	82.3	82.1	85.2	84.1		134.4
10000	71.5	82.0	85.8	83.8	80.8	79.7	78.6	75.8	76.7	80.1	81.8	83.7	80.8	81.8	81.0		134.3
12500	67.2	79.8	83.3	80.2	77.4	76.5	75.2	72.8	73.5	75.2	79.3	80.2	77.2	78.4	78.2		132.3
16000	65.3	77.8	80.9	77.3	79.9	74.3	72.7	69.6	70.8	72.8	75.8	76.7	74.4	75.8	74.4		131.6
20000	60.4	72.8	75.5	73.4	71.4	69.3	68.4	64.4	68.4	69.6	71.6	73.2	70.3	70.4	68.2		128.0
OVERALL MEASURED	89.8	95.2	97.8	97.5	93.1	93.0	91.8	92.7	92.0	92.8	94.9	95.7	96.0	98.1	97.7		
OVERALL CALCULATED	87.2	95.2	98.6	98.3	92.7	92.8	91.6	92.1	92.0	92.8	94.7	96.2	96.1	98.0	97.4		149.3
PNDB	102.1	110.0	113.4	113.5	107.1	106.9	106.1	106.9	105.0	106.2	107.4	110.5	108.7	111.7	109.6		

Table A-XX.
FULLY TREATED MOD VII BLADES
SCALE MODEL - SCALED DATA
NOMINAL NOZZLE
200' SIDELINE
72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)														
50	59.3	63.3	64.6	69.5	70.3	71.9	73.1	73.1	74.2	73.9	74.3	74.1	74.6	74.6	71.6
63	59.7	66.4	66.6	69.0	70.6	74.8	76.5	78.7	77.7	79.3	80.4	77.1	75.6	73.5	69.7
80	57.0	60.3	63.4	64.7	66.9	68.6	69.0	70.0	71.1	71.6	74.0	74.8	75.2	76.0	73.2
100	57.2	61.4	64.5	67.8	69.1	70.7	72.1	74.4	76.5	77.1	79.2	79.2	80.3	80.1	76.5
125	62.7	65.9	69.3	74.5	75.3	74.9	77.4	79.2	81.5	82.1	82.1	81.8	81.4	79.9	76.2
160	63.6	68.9	72.5	74.9	77.1	77.8	77.3	79.5	80.4	80.1	81.1	80.9	80.2	78.9	72.9
200	64.6	71.0	74.1	74.7	78.0	79.9	77.1	77.4	81.2	77.7	78.0	76.9	77.0	74.1	69.6
250	60.0	67.5	68.8	69.1	72.0	72.6	72.1	75.9	75.1	76.6	78.9	77.5	77.8	74.5	69.5
315	60.1	66.6	68.2	72.7	72.9	74.9	75.1	77.2	78.5	78.1	78.3	76.7	77.0	74.6	68.3
400	60.0	66.6	69.8	70.2	72.8	74.5	75.3	75.0	76.3	76.6	78.2	76.6	75.1	73.4	67.2
500	58.9	65.3	68.1	70.5	73.9	74.6	75.1	76.4	77.1	77.0	78.0	76.9	74.9	71.6	64.8
630	62.4	68.0	73.7	76.4	75.0	74.3	75.1	75.1	76.1	76.5	78.8	77.6	75.5	72.1	67.6
800	62.3	69.1	72.9	77.2	74.8	76.5	74.2	75.2	75.2	75.6	77.9	76.7	73.6	71.2	67.5
1000	62.9	70.1	77.8	73.5	73.9	76.7	73.3	76.1	75.3	74.6	78.0	74.5	73.9	72.0	69.1
1250	60.5	67.9	75.6	76.1	73.5	74.6	72.9	74.0	73.2	73.5	75.8	74.3	72.4	70.5	66.7
1600	67.3	82.7	89.8	92.4	84.1	83.9	84.4	86.2	81.5	82.7	81.2	86.4	78.5	81.6	72.7
2000	58.6	70.3	77.3	79.1	75.7	78.4	74.8	74.8	75.1	75.4	75.6	75.1	73.4	73.5	66.9
2500	60.5	74.7	80.3	81.3	77.9	80.6	79.2	75.4	74.2	74.6	79.1	77.5	74.6	75.6	68.8
3150	61.3	75.5	84.3	84.9	81.9	82.7	79.5	78.6	77.3	78.0	79.9	81.4	81.6	78.4	68.5
4000	56.2	77.0	81.1	79.0	77.9	79.7	78.3	76.2	76.2	77.0	79.8	78.4	76.0	75.7	68.4
5000	55.9	72.7	80.1	80.4	79.0	78.9	78.5	75.6	76.4	79.2	80.0	80.3	75.2	72.6	65.4
6300	50.6	70.1	77.7	77.0	75.9	76.0	75.3	72.3	73.6	74.7	77.8	77.0	71.5	68.7	61.6
8000	47.2	67.8	75.3	74.5	75.0	74.6	73.6	70.7	71.7	73.0	74.9	74.0	68.8	65.8	56.3
10000	40.1	62.1	69.9	71.1	71.2	70.4	70.2	66.4	70.2	70.7	71.4	70.9	64.8	59.7	47.9
OVERALL CALCULATED	74.7	86.4	92.9	94.6	90.4	91.4	90.6	91.2	90.9	91.3	92.4	92.5	90.6	89.5	84.1
PNDB	85.6	99.3	105.8	107.4	104.0	105.0	103.2	103.6	102.2	102.9	104.6	104.9	103.4	101.3	93.6

Table A-XXI.

FULLY TREATED MOD VII BLADES
SCALE MODEL DATA
NOMINAL NOZZLE
100' ARC
84% FAN SPEED

MODEC	SOUND PRESSURE LEVELS (50 DEG. F., 70 PERCENT REL. HUM., DAY)	ANGLES FROM INLET IN DEGREES (AND RADIANS)	
FREQ.	20. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120. 130. 140. 150. 160.	(0.35)(0.52)(0.70)(0.87)(1.05)(1.22)(1.40)(1.57)(1.75)(1.92)(2.09)(2.27)(2.44)(2.62)(2.79)	MHL
50	78.6 76.0 73.6 71.4 69.9 68.3 66.8 65.3 63.8 62.3 60.8 59.3 57.8 56.3 54.8		132.6
63	74.7 73.1 71.1 69.5 67.9 66.3 64.8 63.3 61.8 60.3 58.8 57.3 55.8 54.3 52.8		133.0
80	72.2 70.6 68.6 66.9 65.3 63.7 62.1 60.5 58.9 57.3 55.8 54.2 52.7 51.1 49.6		132.6
100	71.3 70.0 68.0 66.3 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 52.0 50.4 48.8		130.6
125	73.0 71.2 69.2 67.5 65.9 64.3 62.7 61.1 59.5 57.9 56.3 54.7 53.1 51.5 49.9		130.2
160	71.7 70.1 68.1 66.4 64.8 63.2 61.6 60.0 58.4 56.8 55.2 53.6 52.0 50.4 48.8		130.9
200	72.7 71.1 69.1 67.4 65.8 64.2 62.6 61.0 59.4 57.8 56.2 54.6 53.0 51.4 49.8		134.5
250	70.8 69.2 67.2 65.5 63.9 62.3 60.7 59.1 57.5 55.9 54.3 52.7 51.1 49.5 47.9		137.6
315	70.9 69.3 67.3 65.6 64.0 62.4 60.8 59.2 57.6 56.0 54.4 52.8 51.2 49.6 48.0		137.3
400	70.9 69.3 67.3 65.6 64.0 62.4 60.8 59.2 57.6 56.0 54.4 52.8 51.2 49.6 48.0		134.5
500	70.5 68.9 66.9 65.2 63.6 62.0 60.4 58.8 57.2 55.6 54.0 52.4 50.8 49.2 47.6		133.0
630	70.8 69.2 67.2 65.5 63.9 62.3 60.7 59.1 57.5 55.9 54.3 52.7 51.1 49.5 47.9		134.9
800	70.7 69.1 67.1 65.4 63.8 62.2 60.6 59.0 57.4 55.8 54.2 52.6 51.0 49.4 47.8		133.2
1000	70.8 69.2 67.2 65.5 63.9 62.3 60.7 59.1 57.5 55.9 54.3 52.7 51.1 49.5 47.9		133.1
1250	70.7 69.1 67.1 65.4 63.8 62.2 60.6 59.0 57.4 55.8 54.2 52.6 51.0 49.4 47.8		132.6
1600	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		134.2
2000	70.2 68.6 66.6 64.9 63.3 61.7 60.1 58.5 56.9 55.3 53.7 52.1 50.5 48.9 47.3		133.0
2500	70.8 69.2 67.2 65.5 63.9 62.3 60.7 59.1 57.5 55.9 54.3 52.7 51.1 49.5 47.9		131.6
3150	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		137.3
4000	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		140.2
5000	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		139.4
6300	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		138.2
8000	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		139.8
10000	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		138.6
12500	70.0 68.4 66.4 64.7 63.1 61.5 59.9 58.3 56.7 55.1 53.5 51.9 50.3 48.7 47.1		136.6
16000	68.6 67.0 65.0 63.3 61.7 60.1 58.5 56.9 55.3 53.7 52.1 50.5 48.9 47.3 45.7		139.6
20000	63.2 61.6 59.6 57.9 56.3 54.7 53.1 51.5 49.9 48.3 46.7 45.1 43.5 41.9 40.3		133.7
OVERALL MEASURED	92.9 91.3 89.7 88.1 86.5 84.9 83.3 81.7 80.1 78.5 76.9 75.3 73.7 72.1 70.5		149.9
OVERALL CALCULATED	91.1 89.5 87.9 86.3 84.7 83.1 81.5 79.9 78.3 76.7 75.1 73.5 71.9 70.3 68.7		
PNDB	103.3 110.0 114.3 114.4 109.9 111.2 108.5 108.9 108.3 110.1 110.6 112.6 112.9 114.1 113.1		

Table A-XXII.

FULLY TREATED MOD VII BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS										SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM, DAY)									
50	61.4	66.4	68.6	73.5	74.2	76.6	77.1	78.1	78.2	78.7	79.0	79.0	80.2	80.4	77.5					
63	62.7	70.5	70.5	72.0	75.3	74.9	78.6	81.6	77.7	77.0	78.5	79.0	78.4	78.2	76.0					
80	61.2	68.3	67.5	69.4	72.0	73.5	76.0	78.2	76.1	75.9	78.9	79.7	80.3	81.0	79.2					
100	62.0	66.2	68.3	72.5	73.1	75.8	77.5	79.4	80.5	81.1	83.1	83.9	84.6	85.0	81.2					
125	67.9	71.9	76.1	77.6	78.9	79.8	82.0	83.2	84.1	86.8	87.3	86.8	88.1	86.9	81.2					
160	68.8	74.2	78.2	78.6	80.9	82.6	82.3	84.0	84.5	86.1	87.1	86.8	87.1	85.0	79.9					
200	68.6	75.0	77.0	78.2	80.1	83.5	82.2	82.9	82.3	82.8	83.1	82.5	82.3	80.9	75.4					
250	65.0	71.7	74.1	75.3	75.7	77.4	76.7	79.1	81.9	80.5	81.7	82.6	83.0	80.6	74.1					
315	65.0	71.8	75.2	76.5	80.2	84.9	81.4	82.1	83.4	84.0	83.9	82.8	83.2	80.5	74.4					
400	64.7	71.6	73.8	75.1	78.8	81.7	80.3	80.9	81.1	81.6	82.8	81.7	80.9	78.2	71.8					
500	64.6	70.7	72.1	75.4	78.9	76.6	80.4	81.3	81.4	81.6	83.1	82.5	80.0	77.4	71.0					
630	63.2	69.3	73.8	76.9	78.6	79.6	79.1	79.8	80.1	80.7	82.8	81.5	79.4	75.8	69.6					
800	66.2	72.2	76.8	83.1	81.9	84.4	81.0	80.1	81.2	80.5	81.7	81.6	79.7	75.1	70.4					
1000	66.2	71.0	79.9	81.1	77.8	79.6	78.3	78.3	80.4	79.9	82.1	78.4	78.5	75.8	70.3					
1250	61.5	69.5	78.4	78.6	77.6	78.4	77.0	76.9	78.8	78.2	80.6	78.9	77.2	74.3	68.7					
1600	63.3	76.9	85.8	87.3	82.7	83.5	81.1	82.2	81.1	82.9	81.7	83.4	80.3	78.4	72.4					
2000	64.8	79.3	88.3	90.9	84.8	87.4	83.0	84.8	82.9	85.5	82.4	85.1	83.3	81.3	74.9					
2500	61.5	75.5	81.4	83.0	81.0	83.8	83.1	80.3	79.2	78.9	82.9	80.2	77.1	76.1	69.7					
3150	64.0	77.3	84.6	85.0	84.8	85.9	85.1	83.1	81.2	82.6	83.0	83.2	80.2	78.1	70.1					
4000	62.4	79.8	85.3	84.9	85.8	86.7	86.5	83.4	82.2	82.9	84.6	85.4	80.9	79.5	71.6					
5000	58.9	76.6	83.4	85.0	83.8	84.7	86.7	82.4	81.6	80.8	83.1	83.5	78.1	76.4	69.2					
6300	54.3	73.7	80.9	81.6	81.6	81.9	83.2	78.5	79.4	78.7	80.9	79.1	74.6	72.6	64.7					
8000	50.5	70.7	77.9	78.5	79.6	79.9	80.4	76.5	77.7	77.7	79.5	77.6	72.0	69.7	60.2					
10000	42.9	64.8	73.1	73.6	75.1	75.6	75.4	71.5	75.2	75.4	74.1	67.9	63.7	53.0						
OVERALL CALCULATED	78.0	87.8	94.5	96.0	94.5	96.3	95.5	95.0	94.9	95.7	96.6	96.4	95.5	94.0	89.0					
PNDB	88.4	101.7	107.8	109.6	108.4	109.7	109.2	107.4	107.0	107.5	108.8	108.9	105.9	104.1	97.4					

Table A-XXIII.

FULLY TREATED MOD VII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODEL SOUND PRESSURE LEVELS (99 DEG. F., 70 PERCENT REL. HUM., DAY) = ANGLES FROM INLET IN DEGREES (AND RADIANS)																
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	MFL
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	
50	79.6	78.0	74.9	77.2	76.9	78.5	78.6	79.7	80.6	81.6	82.6	83.7	87.6	92.0	95.9	134.8
63	74.7	74.1	74.9	75.7	77.2	77.8	77.9	79.7	80.9	81.9	83.2	83.8	87.9	93.1	98.9	135.1
80	74.2	74.6	74.7	77.0	76.5	77.3	78.6	79.5	81.6	81.6	83.7	84.5	88.3	92.5	94.5	134.7
100	72.7	74.9	75.8	77.5	78.7	78.9	78.9	79.8	79.9	81.7	82.7	83.6	86.8	90.1	91.0	133.0
125	73.8	74.5	76.0	75.8	78.3	77.9	78.0	78.8	79.1	80.2	82.0	81.9	85.8	88.2	89.0	131.6
160	74.7	73.9	75.9	74.5	82.8	80.6	76.9	83.5	83.7	82.6	84.9	85.5	89.7	92.1	92.7	135.2
200	74.9	75.3	75.1	77.7	78.3	78.8	79.8	81.7	83.1	84.1	88.0	90.0	93.2	95.4	94.9	137.6
250	79.8	80.0	81.8	82.6	82.8	82.7	84.8	85.9	87.0	88.2	90.9	92.1	95.1	97.0	95.8	139.9
315	83.9	86.1	85.2	85.8	87.3	86.1	85.9	87.0	87.9	91.2	92.0	92.9	94.8	99.1	93.9	140.4
400	80.6	83.3	82.8	82.6	84.1	84.0	83.8	84.9	85.7	86.9	88.2	88.8	90.1	91.3	89.9	136.8
500	78.5	80.9	79.7	79.3	80.1	80.9	81.0	81.5	84.0	83.7	87.8	89.0	90.8	91.2	89.0	139.8
630	78.7	80.4	81.0	82.5	87.2	84.9	84.0	86.1	87.9	87.3	88.4	89.0	90.9	91.4	89.0	137.5
800	78.7	82.1	81.9	81.7	84.0	85.8	85.9	85.8	86.1	86.2	89.0	88.9	89.2	89.3	87.1	136.8
1000	77.8	81.2	80.3	84.6	87.2	89.1	86.3	86.1	85.3	86.8	88.2	88.3	89.0	88.2	86.9	137.2
1250	77.9	80.3	80.1	80.5	82.9	83.0	83.1	82.9	83.8	84.8	88.0	88.1	88.8	88.0	85.7	135.5
1600	76.7	79.2	81.2	80.8	82.1	83.1	82.2	83.0	82.9	84.1	87.0	87.0	86.1	86.3	84.8	134.5
2000	75.2	77.6	80.4	79.0	79.5	82.1	80.2	81.2	82.4	83.4	86.2	85.1	86.0	84.4	84.3	133.5
2500	75.3	79.0	82.8	82.3	82.9	83.7	80.8	80.6	81.7	82.7	86.1	85.9	85.9	84.8	83.6	134.1
3150	76.9	81.6	87.3	86.1	87.4	86.3	83.1	82.3	82.1	82.4	85.4	87.4	85.0	85.2	84.0	135.9
4000	84.6	92.1	97.2	96.8	98.1	103.1	95.2	93.8	92.1	90.2	94.2	93.2	92.8	96.0	94.1	147.6
5000	78.2	83.7	87.6	90.7	94.4	94.5	94.3	89.4	85.4	84.2	88.6	87.2	86.0	87.2	85.1	141.8
6300	77.2	84.4	89.3	90.1	88.7	90.5	89.3	86.0	85.1	84.3	86.2	87.2	86.0	86.5	84.3	139.2
8000	79.0	92.3	94.5	93.1	90.3	92.1	94.2	87.0	87.1	91.4	92.0	88.2	92.2	89.3		143.7
10000	75.7	85.2	90.0	88.7	88.2	88.9	89.1	84.7	83.7	83.7	86.7	86.9	84.5	86.0	84.5	139.7
12500	72.9	84.6	88.6	86.9	86.6	85.3	86.4	82.0	82.4	82.2	86.5	86.2	83.0	84.4	83.3	139.5
16000	70.5	81.0	85.9	83.1	82.8	81.7	82.5	78.3	79.4	80.7	83.7	82.6	79.6	81.6	79.6	138.2
20000	65.1	76.8	80.8	78.0	78.7	76.5	77.3	73.4	76.3	77.3	80.4	79.3	77.2	76.4	75.2	136.5
OVERALL MEASURED	93.6	98.0	101.0	101.4	101.9	103.9	101.0	99.7	99.7	100.0	101.8	102.7	103.6	104.8	105.7	
OVERALL CALCULATED	92.9	98.2	101.5	101.2	102.2	104.9	101.6	99.7	99.2	99.5	102.3	102.6	103.6	105.5	105.3	
PNOB	100.1	112.0	115.9	115.8	117.0	120.1	119.4	114.2	113.3	112.6	116.0	115.7	115.5	117.8	116.4	133.3

Table A-XXIV.

FULLY TREATED MOD VII BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)														
50	62.6	68.3	70.6	74.8	77.0	77.9	78.4	79.3	79.3	80.7	81.0	80.8	82.5	83.5	80.9
63	63.5	67.8	71.6	73.0	76.6	76.9	77.4	78.3	78.5	79.2	80.3	79.1	81.4	81.5	78.7
80	64.2	67.1	71.5	71.6	81.0	79.5	76.3	83.0	83.0	81.6	83.1	82.6	85.2	85.3	82.2
100	64.2	68.4	70.6	74.7	76.4	77.7	79.2	81.2	82.4	83.0	86.2	87.0	88.6	88.4	84.2
125	68.9	72.9	77.1	79.6	80.9	81.5	83.3	85.3	86.3	87.0	89.0	89.1	90.4	89.9	84.9
160	72.8	78.9	80.4	82.8	85.4	84.9	85.2	86.3	87.1	90.0	90.1	89.8	90.1	87.9	82.8
200	69.3	76.0	78.0	79.5	82.1	82.7	83.0	84.2	84.9	85.7	86.2	85.7	85.2	84.0	78.6
250	67.0	73.5	74.8	76.1	78.0	79.6	80.2	80.9	83.1	82.5	85.8	85.8	86.0	83.7	77.5
315	67.0	72.9	76.0	79.3	85.1	83.6	83.1	85.3	87.0	86.0	86.3	85.8	85.9	83.9	77.3
400	66.7	74.4	76.8	78.4	81.8	84.5	85.0	85.0	85.2	84.8	86.9	85.6	84.1	81.6	75.1
500	65.6	73.4	75.1	81.2	85.0	87.7	85.4	85.3	84.3	84.6	86.0	84.9	83.8	80.4	74.7
630	65.5	72.3	74.8	77.0	80.6	81.6	82.1	82.1	82.9	83.4	85.7	84.6	83.5	80.0	73.3
800	64.0	71.0	75.8	77.3	79.7	81.6	81.2	82.2	81.9	82.7	84.7	83.4	80.7	78.1	72.1
1000	62.1	69.3	74.9	75.4	77.1	80.6	79.2	80.3	81.3	81.8	83.8	81.4	80.5	76.1	71.2
1250	62.2	70.5	77.2	78.7	80.5	82.1	79.7	79.7	80.7	81.2	83.7	82.2	80.3	76.3	70.3
1600	63.2	72.9	81.6	82.4	84.9	84.8	82.1	81.4	81.0	80.8	83.0	83.7	79.3	76.5	70.3
2000	70.5	83.3	91.4	93.0	95.7	101.6	94.2	92.9	91.1	88.6	91.9	89.4	86.3	87.2	80.1
2500	63.8	74.6	81.7	86.8	92.2	92.9	93.3	88.5	84.3	82.6	86.1	83.3	80.1	78.2	70.6
3150	62.2	75.1	83.3	86.3	86.2	89.0	88.3	85.2	84.1	82.8	83.8	83.3	80.0	77.2	69.3
4000	63.4	82.7	88.4	89.2	88.2	90.7	93.3	89.3	86.1	85.7	89.0	88.1	82.1	82.6	73.6
5000	60.1	75.9	84.3	85.3	86.3	85.0	88.8	84.6	83.3	82.8	84.8	83.5	78.8	76.7	68.9
6300	56.2	75.0	82.9	83.7	85.1	84.9	86.5	82.3	82.5	81.7	84.9	83.0	77.3	74.8	66.6
8000	52.4	70.9	80.3	80.4	81.9	81.9	83.4	79.4	80.3	81.0	82.8	79.8	74.0	71.5	61.5
10000	44.8	66.1	75.1	75.7	78.4	77.6	79.1	75.5	78.1	78.4	80.2	76.9	71.7	65.7	54.9
OVERALL CALCULATED	79.7	89.4	95.8	97.5	99.9	103.4	100.7	98.9	98.2	98.1	100.0	99.0	98.3	97.2	92.1
PNDP	90.5	103.4	109.5	111.2	113.6	117.2	114.6	112.1	111.1	110.0	112.6	111.4	108.2	107.4	100.6

Table A-XXV.

FULLY TREATED MOD VIII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PWL
FREQ.	30	40	50	60	70	80	90	100	110	120	130	140	150	160			
	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)			
50	70.4	68.7	71.3	70.7	69.2	69.7	70.2	71.7	72.3	72.2	72.9	74.3	75.8	83.6			122.9
63	64.9	66.2	73.9	65.1	65.2	66.2	68.5	70.8	69.8	69.2	69.9	72.0	73.5	81.6			121.0
80	62.3	62.8	65.4	65.5	65.5	66.5	68.4	69.3	68.4	69.0	70.2	71.4	72.9	79.9			119.4
100	66.6	65.9	65.7	67.1	67.2	66.8	70.9	71.8	70.9	69.9	70.9	70.4	72.2	79.3			120.2
125	61.8	63.2	63.7	64.8	64.4	63.4	64.7	64.8	65.0	65.9	66.9	67.9	68.7	77.4			116.6
150	62.6	63.2	64.2	64.3	64.4	64.7	66.2	66.4	67.5	68.7	69.9	71.1	72.4	76.4			117.9
200	63.7	65.7	69.3	69.4	70.3	69.2	71.1	72.4	73.3	74.0	74.7	75.5	76.8	78.4			122.5
250	67.6	69.9	71.5	72.6	72.9	72.4	74.2	75.6	76.0	76.4	78.2	78.3	78.1	77.8			125.0
315	70.1	71.4	72.7	74.9	74.1	73.2	74.7	75.4	76.5	77.0	77.8	78.2	77.1	76.4			125.3
400	69.7	71.3	71.3	70.5	72.5	71.6	71.4	72.0	72.2	72.8	72.8	73.1	73.9	73.5			122.0
500	69.4	70.7	69.3	69.7	69.4	68.7	69.7	70.6	71.5	72.4	73.4	73.7	73.0	71.7			121.0
630	70.1	71.9	71.7	71.3	72.2	72.1	72.2	72.6	72.7	73.9	73.3	73.8	75.2	73.2			122.6
800	69.4	70.4	70.7	71.1	71.4	70.6	71.1	72.4	72.9	74.3	75.4	74.6	74.9	74.1			122.7
1000	69.5	71.3	71.9	71.6	71.9	71.6	71.7	73.2	73.0	74.3	75.8	75.3	74.0	73.4			123.0
1250	69.1	71.7	72.0	70.4	71.4	69.9	70.5	71.9	72.7	75.1	77.2	77.0	74.7	74.1			123.4
1600	70.2	72.3	71.6	70.5	71.8	68.3	68.8	68.9	70.4	71.8	74.7	74.5	72.8	72.8			121.8
2000	74.3	75.9	75.5	72.8	73.5	69.9	69.0	68.9	70.0	71.9	73.1	74.2	75.0	74.2			123.2
2500	86.5	87.2	88.1	83.5	83.3	80.0	77.9	76.6	78.1	79.8	82.8	82.8	86.7	85.4			134.0
3150	71.8	75.6	74.8	71.3	71.3	69.0	67.6	67.5	68.7	68.6	73.8	71.1	74.2	71.1			122.6
4000	78.4	79.1	76.5	74.4	72.3	68.7	67.7	68.9	67.3	72.2	72.2	73.5	75.2	74.0			124.8
5000	85.4	86.2	86.7	84.4	81.7	78.7	75.4	75.8	75.2	74.1	81.0	83.2	83.7	81.2			133.2
6300	79.0	81.6	80.5	77.6	78.6	73.5	71.5	72.2	73.3	74.2	81.1	78.0	78.1	74.0			128.8
8000	80.5	84.6	81.8	80.0	79.6	74.4	71.0	71.9	71.5	77.2	81.6	79.2	77.9	75.7			131.1
10000	80.7	81.5	81.2	80.3	77.6	73.6	71.2	71.6	71.9	73.5	77.8	76.8	75.7	73.1			130.1
12500	77.4	78.6	79.3	77.4	74.0	69.7	66.8	67.9	67.5	71.0	75.7	73.7	73.3	72.4			128.5
16000	75.6	76.1	75.9	74.1	73.2	68.9	66.0	65.8	67.5	69.2	72.9	71.6	70.8	70.2			128.1
20000	73.2	73.4	73.5	70.9	69.0	66.7	63.0	64.2	64.8	67.8	70.5	69.7	67.8	69.2			128.1
OVERALL MEASURED	92.5	93.3	93.1	90.7	90.3	88.7	88.1	89.5	90.0	90.3	92.4	92.3	92.7	96.3			
OVERALL CALCULATED	91.5	92.9	93.0	90.4	89.5	86.5	85.8	86.1	86.7	88.0	90.8	90.7	92.6	92.1			141.1
PWDB	103.0	106.3	106.6	103.9	103.2	100.2	99.0	98.6	99.6	101.2	104.0	104.0	105.8	105.1			

Table A-XXVI.

FULLY TREATED MOD VIII BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59, DEG. F, 70 PERCENT REL. HUM, DAY,														
50	60.1	61.6	63.0	65.5	66.3	66.4	70.6	71.4	70.1	68.3	68.2	66.2	65.7	69.3	
63	59.2	58.9	61.0	63.2	63.4	62.9	64.3	64.3	64.0	64.3	64.1	63.6	62.1	67.2	
80	59.9	58.8	61.4	62.6	63.4	64.1	65.8	65.8	66.5	67.0	67.1	66.7	65.7	66.0	
100	56.9	61.3	66.4	67.7	69.5	68.6	70.6	71.9	72.3	72.3	71.8	71.0	70.0	67.8	
125	60.7	65.3	68.6	70.8	71.8	71.8	73.7	75.0	74.9	74.6	75.2	73.8	71.2	67.0	
160	63.0	66.8	69.7	73.0	73.0	72.5	74.2	74.7	75.4	75.1	74.8	73.5	70.0	65.4	
200	62.5	66.6	68.3	68.6	71.4	70.9	70.8	71.3	71.1	70.9	69.7	68.4	66.7	62.3	
250	62.1	65.9	66.2	67.7	68.3	68.0	69.1	69.9	70.4	70.5	70.3	68.9	65.7	60.3	
315	62.6	67.0	68.5	69.3	71.0	71.3	71.5	71.8	71.5	71.9	70.1	68.9	67.8	61.5	
400	61.8	65.4	67.5	69.1	70.2	69.8	70.5	71.6	71.7	72.3	72.1	69.6	66.9	62.3	
500	61.8	66.3	68.6	69.5	70.6	70.7	71.0	70.4	71.7	72.2	72.5	70.3	66.3	61.8	
630	61.2	66.5	68.7	68.2	70.1	69.0	69.7	71.0	71.4	73.0	73.8	71.8	66.9	61.8	
800	62.2	67.0	68.2	68.3	70.4	67.4	68.0	68.0	69.0	69.6	71.3	69.2	64.8	59.4	
1000	66.1	70.5	72.0	70.6	72.0	68.9	68.2	68.0	68.6	69.7	69.6	68.8	66.8	61.2	
1250	78.1	81.7	84.4	81.2	81.8	79.0	77.0	75.6	76.6	77.5	79.1	77.3	78.3	72.1	
1600	64.1	69.9	71.1	70.1	71.9	68.0	66.7	66.5	67.1	66.2	70.1	65.4	65.5	57.4	
2000	67.6	73.3	72.8	72.0	70.8	67.7	66.9	67.9	65.8	69.8	68.5	67.8	66.3	60.0	
2500	76.4	80.3	82.6	81.9	80.1	77.6	75.5	73.9	73.6	73.6	77.1	77.3	74.6	66.8	
3150	69.8	75.6	76.7	75.3	77.1	72.5	70.7	71.2	71.8	71.8	77.2	72.0	66.8	59.1	
4000	71.0	78.5	78.9	77.7	78.1	73.6	71.3	71.0	72.1	74.8	77.7	73.1	68.3	60.8	
5000	71.4	75.8	77.8	78.4	76.7	73.3	71.0	71.2	71.0	71.2	74.4	71.1	66.4	57.5	
6300	67.8	72.9	76.1	75.9	73.5	69.8	67.1	68.0	67.0	69.4	72.5	68.1	63.7	55.7	
8000	65.6	70.6	73.1	73.2	73.4	69.7	67.1	66.7	67.7	68.2	70.1	66.1	60.8	52.1	
10000	62.5	67.9	71.2	70.7	70.0	68.5	65.1	66.0	65.9	67.5	68.2	64.2	57.1	48.9	
OVERALL CALCULATED	82.6	87.2	89.3	88.2	88.1	85.6	84.9	84.9	85.2	85.7	87.2	85.1	83.1	78.4	
PNDB	96.0	100.5	102.7	102.1	101.4	98.8	97.4	96.9	96.9	98.2	100.4	98.2	95.3	88.4	

Table A-XXVII.

FULLY TREATED MOD VIII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

72% FAN SPEED

MODEL SOUND PRESSURE LEVELS (59, DEG. F. 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIAN)																
	30,	40,	50,	60,	70,	80,	90,	100,	110,	120,	130,	140,	150,	160,	PWL	
FREQ.	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()
50	72.3	71.1	72.2	73.0	73.5	74.2	74.4	75.7	76.2	77.6	78.5	80.6	84.3	88.1		127.8
63	69.5	72.0	74.4	71.7	71.9	73.4	74.5	75.4	75.5	76.7	78.4	80.8	84.5	87.7		127.7
80	68.3	69.7	71.7	71.5	72.2	73.6	73.6	74.8	75.6	76.9	78.7	80.7	83.6	86.1		127.0
100	69.7	69.3	72.9	73.0	73.2	73.9	73.8	74.8	74.7	75.7	77.6	79.1	81.4	82.6		129.6
125	69.6	71.0	73.6	75.4	77.4	77.8	79.1	78.1	76.4	74.0	77.8	78.3	80.5	80.7		126.6
160	68.6	69.4	69.7	70.0	71.2	72.1	72.4	73.7	74.6	77.2	79.6	81.4	83.8	84.0		126.6
200	70.0	72.0	73.9	73.2	74.6	75.9	77.4	79.1	80.3	82.7	83.9	85.7	87.6	87.1		130.9
250	76.3	77.9	79.2	79.0	78.6	79.5	80.8	82.4	83.3	85.0	86.1	87.2	88.8	87.3		133.1
315	78.4	78.9	78.8	80.8	80.6	80.3	81.8	82.4	83.4	83.8	85.0	86.0	86.5	85.3		132.6
400	78.6	78.9	77.7	77.9	80.1	78.8	80.8	81.0	80.0	81.5	81.6	83.4	83.4	82.7		130.5
500	77.3	77.6	76.9	76.4	76.9	76.4	77.9	81.1	80.8	81.7	83.6	84.2	84.2	83.3		130.4
630	77.6	78.1	79.6	77.7	79.3	80.5	81.3	81.9	82.5	83.6	82.9	83.7	83.6	82.1		131.4
800	75.2	76.0	75.7	77.8	79.0	79.6	78.5	79.4	80.3	81.3	82.5	82.9	82.0	80.7		129.9
1000	73.8	74.6	76.5	77.7	79.5	79.4	79.4	80.0	80.3	81.4	82.0	81.7	80.8	79.9		129.8
1250	73.3	75.3	75.9	77.5	78.8	78.4	78.8	79.3	80.0	81.2	82.2	82.3	80.8	79.8		129.6
1600	73.8	76.2	76.1	76.3	78.6	76.8	76.7	78.3	78.5	79.7	81.1	80.9	79.4	78.6		128.6
2000	75.0	78.7	75.6	76.9	79.0	75.0	75.7	76.7	77.3	79.2	80.1	79.7	79.2	77.9		128.1
2500	80.8	81.5	81.5	79.1	80.2	77.4	75.9	76.0	77.1	79.3	80.7	80.3	80.3	79.3		129.8
3150	96.7	96.8	96.8	92.9	96.9	92.9	88.8	88.0	84.3	86.0	92.6	89.9	94.1	89.8		143.9
4000	81.0	82.9	81.6	78.4	79.7	75.4	74.0	76.4	74.4	79.0	78.2	78.4	79.7	78.9		129.6
5000	82.9	82.8	84.1	81.9	81.0	77.6	76.0	76.8	78.4	79.1	81.9	81.6	82.0	80.8		131.7
6300	88.5	93.4	92.0	87.3	89.5	86.7	82.2	82.3	84.3	84.0	88.8	85.7	84.8	83.7		139.2
8000	81.7	84.1	83.6	81.5	81.5	78.3	75.5	76.4	79.2	80.6	82.7	80.6	79.6	79.4		132.7
10000	84.2	86.5	87.8	88.0	85.9	82.7	78.5	80.4	81.8	80.4	82.9	82.2	80.9	79.4		136.5
12500	81.5	83.2	83.1	82.5	80.0	79.6	73.4	74.5	75.9	77.4	79.5	77.5	77.2	78.0		133.3
16000	78.4	81.7	81.2	79.2	78.5	75.8	71.9	72.9	75.5	75.8	76.8	75.9	74.9	77.7		133.4
20000	75.6	79.3	77.6	75.2	73.9	72.3	69.0	70.7	72.7	74.2	74.5	74.0	72.7	78.0		133.2
OVERALL MEASURED	98.2	99.1	98.9	96.0	97.9	95.0	93.9	94.2	94.4	95.9	97.7	97.2	99.0	99.3		
OVERALL CALCULATED	98.4	99.7	99.5	96.4	98.9	95.9	93.7	94.1	94.2	95.3	97.9	97.3	98.9	98.1		148.1
PNDB	113.5	114.3	114.2	111.3	114.1	111.0	108.4	108.4	107.0	108.5	112.5	111.1	113.4	110.9		

Table A-XXVIII.

FULLY TREATED MOD VIII BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59. DEG. F, 70 PERCENT REL. HUM, DAY)															
50	63.2	65.1	69.8	71.4	72.3	73.5	73.5	74.3	73.9	74.1	74.9	74.9	74.9	72.5		
63	63.0	66.7	70.9	73.7	76.5	77.3	78.7	75.5	75.5	72.4	74.2	73.9	73.9	70.5		
80	61.9	65.0	66.9	68.3	70.2	71.6	72.0	73.2	73.6	75.5	76.8	77.0	77.1	73.6		
100	63.2	67.5	70.6	71.5	73.6	75.3	77.0	78.5	79.3	80.9	81.1	81.2	80.8	76.5		
125	69.4	73.3	76.3	77.2	77.6	78.9	80.3	81.8	82.3	83.2	83.2	82.6	81.8	76.5		
160	71.3	74.2	75.8	79.0	79.5	79.6	81.3	81.7	82.3	82.0	82.0	81.4	79.4	74.3		
200	71.4	74.2	74.6	76.1	79.0	78.1	80.2	80.3	78.9	79.6	78.6	78.7	76.2	71.6		
250	70.0	72.7	73.8	74.4	75.8	75.7	77.3	80.3	79.6	79.8	80.5	79.4	76.8	71.9		
315	70.1	73.3	76.5	75.7	78.1	79.8	80.6	81.1	81.2	81.6	79.7	78.8	76.1	70.5		
400	67.7	71.0	72.5	75.7	77.8	78.8	77.8	78.5	79.1	79.5	79.2	77.5	74.4	68.9		
500	66.1	69.5	73.2	75.6	78.2	78.5	78.7	79.2	79.0	79.3	78.7	76.6	73.1	67.8		
630	65.4	70.2	72.6	75.3	77.5	77.5	77.2	78.5	78.6	79.0	78.8	77.2	72.9	67.5		
800	65.7	70.9	72.6	74.1	77.2	75.8	75.9	77.3	77.1	77.5	77.7	75.6	71.4	66.0		
1000	66.8	73.3	72.1	74.7	77.6	74.0	74.9	75.7	75.9	77.0	76.5	74.3	70.0	65.0		
1250	72.4	76.0	77.9	76.8	78.7	76.4	75.1	75.0	75.7	76.9	77.1	74.8	71.9	66.0		
1600	88.0	91.2	93.1	90.5	95.3	91.8	88.0	86.9	82.7	83.6	88.9	84.2	85.4	76.1		
2000	72.2	77.2	77.9	76.0	78.2	74.4	73.1	75.3	72.9	76.6	74.4	72.6	70.9	64.9		
2500	73.8	76.9	80.2	79.4	79.4	78.6	75.7	75.7	76.9	76.7	78.0	75.7	73.0	66.3		
3150	79.3	87.4	88.2	84.9	88.0	85.7	81.3	81.3	82.8	81.5	84.9	79.7	75.5	68.8		
4000	72.1	78.0	79.8	79.1	80.1	77.4	74.8	75.5	77.8	78.2	78.8	74.5	70.0	63.8		
5000	74.9	80.8	84.4	84.1	85.1	82.3	78.3	80.1	80.9	78.6	79.5	76.5	71.6	63.8		
6300	71.9	77.5	80.0	80.9	79.5	79.7	73.7	74.6	75.4	75.8	76.3	71.8	67.6	61.4		
8000	68.4	76.1	78.4	78.3	78.7	76.7	73.0	73.8	75.7	74.9	74.1	70.4	64.9	59.6		
10000	64.9	73.8	75.3	75.0	74.9	74.1	71.1	72.5	73.8	73.9	72.2	68.5	62.0	57.7		
OVERALL CALCULATED	89.7	94.0	95.8	94.2	97.5	94.9	92.9	93.1	92.8	93.0	94.3	91.9	90.6	84.8		
PNDB	102.3	107.1	108.5	107.2	110.3	107.7	105.2	105.2	105.6	105.3	107.0	103.4	101.9	94.6		

Table A-XXIX.

FULLY TREATED MOD VIII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL SOUND PRESSURE LEVELS (59, DEG, F, 70 PERCENT REL, HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIAN)																	PWL	
FREQ.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.				
(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()	()		
50	74.0	73.1	73.8	72.2	75.6	76.4	76.7	78.7	79.0	79.9	81.5	83.8	88.5	91.8			131.2	
63	71.3	73.5	75.9	74.7	74.3	75.9	77.4	78.5	78.8	79.6	82.0	84.5	88.6	91.7			131.2	
80	70.8	72.4	74.2	74.8	75.1	75.9	76.0	77.8	78.5	80.1	82.0	84.3	88.1	89.0			130.5	
100	72.0	72.7	74.8	75.2	75.3	75.8	76.3	77.5	77.9	78.7	80.9	82.8	85.6	86.6			128.9	
125	72.8	78.2	79.7	77.8	80.4	77.5	81.7	85.4	82.0	82.1	82.0	81.9	83.6	84.9			131.4	
160	71.7	72.7	72.9	73.6	74.2	74.2	75.0	78.5	78.7	80.7	83.1	85.4	88.5	87.9			130.6	
200	72.3	74.6	76.3	76.6	76.4	78.8	80.3	82.3	83.1	85.9	87.9	89.7	92.2	91.1			134.7	
250	79.1	81.9	85.1	86.8	85.5	84.4	86.3	85.5	87.5	88.8	90.1	91.4	92.8	91.3			137.6	
315	82.0	82.4	81.9	83.7	82.5	83.0	83.6	85.1	85.8	87.1	88.1	88.9	90.0	88.7			135.5	
400	81.7	81.1	80.0	80.5	80.3	81.4	81.9	82.5	82.8	85.0	85.3	85.6	86.9	84.7			133.0	
500	80.9	82.2	83.6	82.0	79.7	80.2	81.0	83.1	85.2	86.3	87.6	88.2	88.3	86.4			134.4	
630	80.5	80.1	80.8	83.3	82.2	83.3	83.9	85.5	85.6	87.0	86.1	87.3	88.0	85.2			134.8	
800	78.0	78.3	78.0	80.0	80.1	81.0	81.6	82.6	82.6	85.2	86.0	85.7	86.0	83.6			132.8	
1000	78.2	79.6	81.0	82.6	82.2	82.2	81.9	82.4	82.8	85.2	85.6	84.8	84.6	83.0			133.1	
1250	77.4	81.6	83.2	83.5	83.1	81.9	81.8	82.6	82.8	84.6	85.5	84.8	84.2	83.4			133.4	
1600	77.4	78.2	79.2	81.0	81.5	80.5	79.6	81.4	81.0	82.8	84.4	83.3	83.0	81.7			131.7	
2000	78.1	80.0	79.4	81.7	81.2	78.9	78.8	79.9	80.6	82.1	83.5	82.5	82.3	80.9			131.3	
2500	80.3	82.7	82.2	80.1	81.7	79.7	78.0	78.8	81.2	82.3	83.9	82.2	82.6	81.7			131.8	
3150	92.1	98.9	97.8	96.7	100.2	91.8	88.1	89.3	88.4	88.1	93.5	88.1	92.8	92.8			145.4	
4000	84.4	91.4	90.1	88.8	92.1	84.5	80.9	82.6	81.7	84.1	85.5	82.1	85.7	85.3			138.0	
5000	84.1	86.0	88.6	88.5	85.6	83.5	81.3	80.3	81.2	82.2	84.2	82.7	83.9	82.6			135.6	
6300	87.9	93.7	91.2	92.9	90.7	90.0	84.2	83.1	85.0	85.3	90.9	83.5	84.0	84.3			146.6	
8000	83.6	89.1	86.7	88.0	87.0	86.2	80.8	80.4	81.5	83.1	86.4	81.2	81.8	81.6			137.1	
10000	84.9	89.3	87.3	88.3	87.0	85.6	81.6	81.1	83.6	82.5	86.2	80.9	81.4	80.1			138.1	
12500	81.6	83.9	84.5	83.7	82.8	81.1	78.2	76.5	77.7	78.9	82.6	76.3	78.2	77.7			139.1	
16000	79.4	82.3	82.0	80.7	81.1	78.8	75.0	75.1	76.7	77.0	80.4	75.2	76.4	77.3			135.0	
20000	76.6	79.3	79.2	77.8	77.0	74.9	72.0	73.0	74.4	75.8	78.3	73.4	73.8	77.7			134.9	
OVERALL MEASURED	97.1	101.3	100.7	100.6	102.2	97.9	96.1	96.8	97.0	98.6	100.1	99.7	101.8	102.0				
OVERALL CALCULATED	96.8	102.0	101.0	100.8	102.3	97.8	95.9	96.8	97.2	98.4	100.7	99.7	101.6	101.5			150.6	
PND8	111.9	116.8	116.1	115.7	117.6	112.2	109.7	110.7	110.6	111.3	114.7	111.6	114.4	114.0				

Table A-XXX.
 FULLY TREATED MOD VIII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 84% FAN SPEED

FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59, DEG, F, 70 PERCENT REL. HUM, DAY)														
50	65.6	68.4	72.2	73.6	74.4	75.3	76.0	77.0	77.0	77.1	78.3	78.6	79.1	76.6
63	66.2	73.9	77.0	76.1	79.4	77.0	81.4	84.9	81.1	80.4	79.3	77.6	79.1	74.7
80	65.0	68.3	70.1	71.9	73.2	73.7	75.4	78.0	77.7	79.0	80.3	81.0	81.8	77.5
100	65.5	70.1	73.5	74.8	75.4	78.2	79.8	81.7	82.1	84.1	85.0	85.3	85.3	80.5
125	72.2	77.4	82.2	85.0	84.4	83.8	85.8	84.9	86.5	87.0	87.2	86.8	85.8	80.5
160	74.9	77.8	78.9	81.8	81.4	82.3	83.0	84.5	84.7	85.2	85.1	84.3	83.0	77.7
200	74.5	76.4	76.9	78.6	79.1	80.7	81.4	81.8	81.7	83.1	82.3	80.9	79.7	73.5
250	73.6	77.4	80.5	80.1	78.5	79.5	80.4	82.4	84.0	84.4	84.5	83.4	81.0	75.0
315	73.0	75.2	77.6	81.3	80.9	82.5	83.3	84.7	84.4	85.1	83.0	82.4	80.5	73.5
400	70.4	73.3	74.7	77.9	78.8	80.2	80.9	81.8	81.3	83.2	82.8	80.7	78.4	71.8
500	70.5	74.5	77.7	80.5	80.9	81.4	81.2	81.5	81.5	83.1	82.3	79.7	76.8	70.9
630	69.5	76.4	79.8	81.3	81.7	81.1	81.1	81.8	81.4	82.4	82.1	79.6	76.3	71.0
800	69.3	72.9	75.7	78.8	80.1	79.5	78.9	80.5	79.6	80.6	80.9	78.0	75.0	69.0
1000	69.9	74.6	75.9	79.5	79.8	78.0	78.0	79.0	79.2	79.9	80.0	77.1	74.1	68.0
1250	67.9	73.1	74.6	77.3	77.7	75.8	75.9	76.8	77.0	77.7	77.8	74.9	71.8	65.6
1600	71.5	76.8	78.3	77.6	80.0	78.5	77.0	77.6	79.5	79.7	80.1	76.4	73.8	67.9
2000	83.0	93.0	93.9	94.1	98.5	90.5	87.0	88.0	86.6	85.5	89.5	82.2	83.8	78.6
2500	75.2	85.4	86.1	86.2	90.4	83.3	79.8	81.4	80.0	81.4	81.5	76.1	76.6	70.7
3150	74.4	79.6	84.4	85.7	83.7	82.1	80.0	79.0	79.3	79.4	79.9	76.4	74.3	67.3
4000	77.8	87.0	86.7	89.9	88.7	88.5	82.9	81.7	83.0	82.3	86.5	76.8	73.8	68.1
5000	73.5	82.6	82.4	85.4	85.3	85.1	79.9	79.3	79.8	80.4	82.2	74.7	71.7	65.2
6300	74.1	82.4	82.9	85.5	85.3	84.5	80.7	80.0	81.9	79.8	81.8	74.0	70.5	62.2
8000	69.7	76.3	79.8	80.8	81.0	80.0	75.3	75.5	76.0	76.0	77.9	68.7	66.3	57.6
10000	66.1	74.2	77.1	77.9	79.6	78.0	74.5	74.3	75.1	74.1	75.5	67.1	63.1	54.3
OVERALL CALCULATED	87.7	95.8	97.0	98.3	100.8	96.6	95.0	95.8	95.7	96.1	97.0	94.3	93.4	88.2
PNDH	101.3	109.6	110.9	112.0	114.5	110.3	107.4	108.1	107.7	107.5	109.5	104.2	103.6	97.9

Table A-XXXI.

FULLY TREATED MOD VIII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODEL SOUND PRESSURE LEVELS (59, DEG. F, 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIAN) PNL																	
FREQ.	30,	40,	50,	60,	70,	80,	90,	100,	110,	120,	130,	140,	150,	160,			
	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()	()
50	75.8	75.5	76.7	77.7	78.5	78.8	79.4	81.0	81.7	82.5	83.6	87.5	92.1	96.3			134.8
63	73.7	76.2	78.2	77.4	77.4	78.1	79.9	81.7	82.1	82.9	83.9	87.9	93.1	97.8			135.4
80	73.9	76.5	78.5	78.3	79.0	79.3	80.2	81.1	81.5	83.5	85.6	88.7	92.4	95.2			134.9
100	74.3	75.1	78.2	78.1	78.4	78.9	79.8	80.5	81.1	82.4	84.1	87.4	90.3	91.5			133.0
125	74.8	76.4	76.9	78.3	77.4	77.0	77.8	79.0	80.3	82.4	83.8	86.6	88.8	89.5			131.9
150	75.1	76.4	76.9	80.6	77.6	78.7	79.8	81.2	83.6	85.6	87.9	90.8	94.3	93.7			135.9
200	76.2	78.4	80.0	79.7	80.2	81.8	83.7	85.5	86.9	89.3	91.6	94.9	97.4	96.3			139.2
250	82.2	84.4	85.4	85.6	85.7	85.2	87.1	88.0	89.3	91.3	93.4	95.8	97.5	96.0			140.6
315	87.1	87.2	87.0	89.0	88.5	85.7	88.3	88.5	89.1	91.1	92.2	94.0	94.8	93.8			140.0
400	83.7	83.5	84.0	83.2	83.3	83.4	84.3	85.9	86.0	87.3	89.2	90.9	91.4	90.5			136.6
500	82.0	81.4	83.2	82.4	82.0	81.7	83.4	85.5	87.6	89.3	91.3	93.3	93.1	91.1			137.8
630	83.9	83.6	83.1	84.8	85.9	87.1	88.3	88.7	89.5	91.0	90.5	92.0	92.2	89.7			138.6
800	82.0	82.6	82.5	85.4	84.1	85.3	86.4	86.9	87.3	89.5	90.8	91.8	91.5	89.3			137.7
1000	85.9	82.1	83.3	85.6	86.5	86.4	85.8	87.1	87.8	88.7	90.0	90.8	89.3	88.2			137.4
1250	83.5	88.0	86.2	85.9	86.2	86.7	87.4	87.8	87.6	89.0	90.5	90.8	90.5	88.5			138.2
1600	79.7	82.3	82.0	83.2	85.8	83.3	83.9	84.9	86.2	87.3	89.1	88.9	87.7	86.3			136.0
2000	84.7	86.8	82.5	83.7	85.4	83.5	83.4	85.0	85.6	86.9	88.3	88.0	87.3	86.4			136.1
2500	82.3	88.0	84.4	84.7	87.3	85.7	85.1	83.8	85.1	87.2	88.7	88.1	87.1	86.7			136.7
3150	84.4	90.9	91.2	89.9	91.4	87.6	86.3	85.9	87.0	86.6	89.7	87.3	88.2	87.1			139.2
4000	93.5	100.0	97.4	99.1	100.0	96.8	93.4	93.3	93.4	94.3	92.2	92.4	93.1	94.8			147.2
5000	86.4	90.7	95.7	96.4	95.0	92.1	91.3	88.2	87.8	87.4	88.2	88.5	86.7	87.1			142.9
6300	85.5	89.4	90.1	90.6	92.3	88.5	86.7	86.3	86.4	85.2	90.3	85.5	84.5	83.3			139.8
8000	88.1	91.0	91.5	91.8	91.0	90.0	86.7	85.8	85.0	87.4	90.1	92.3	87.0	87.4			142.9
10000	84.4	88.2	90.0	88.9	88.5	86.6	82.8	82.9	84.8	84.1	86.3	84.1	82.9	82.1			139.3
12500	83.0	86.4	88.0	88.5	87.0	84.0	80.3	80.5	81.7	82.7	85.4	82.2	81.2	81.2			138.7
16000	79.7	83.9	83.9	84.6	84.9	81.9	79.6	78.1	80.8	81.6	83.1	80.9	77.9	79.2			138.1
20000	76.4	80.4	81.5	80.9	80.2	77.4	76.3	76.4	78.3	80.7	80.4	79.5	75.3	79.0			137.7
OVERALL MEASURED	98.5	102.5	102.5	103.0	103.3	101.2	100.1	100.3	100.8	102.3	103.6	104.3	105.8	106.3			153.7
OVERALL CALCULATED	98.6	103.3	102.8	103.8	103.9	101.4	100.2	100.3	101.1	102.4	103.7	104.6	105.9	106.0			
PND8	113.4	118.4	117.2	118.3	119.0	116.4	114.5	114.5	115.1	116.1	116.3	116.4	117.0	117.3			

Table A-XXXII.

FULLY TREATED MOD VIII BLADES

SCALE MODEL - SCALED DATA

NOMINAL NOZZLE

200' SIDELINE

TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59, DEG. F, 70 PERCENT REL. HUM, DAY)															
50	67.8	70.8	75.5	76.5	77.5	78.5	79.4	80.0	80.2	80.8	81.4	83.2	83.8	81.5		
63	68.2	72.1	74.1	76.7	76.5	76.5	77.4	78.5	79.4	80.7	81.1	82.3	82.2	79.3		
80	68.4	72.0	74.1	78.9	76.7	78.1	79.4	80.7	82.6	83.9	85.1	86.4	87.5	83.2		
100	69.3	74.0	77.1	77.9	79.2	81.2	83.2	84.9	85.9	87.6	88.7	90.4	90.5	85.7		
125	75.3	79.8	82.5	83.8	84.6	84.6	86.6	87.4	88.3	89.5	90.5	91.3	90.6	85.2		
160	80.0	82.6	84.0	87.2	87.4	85.1	87.8	87.8	88.0	89.2	89.2	89.4	87.7	82.8		
200	76.5	78.8	81.0	81.4	82.2	82.7	83.7	85.2	84.9	85.4	86.1	86.2	84.2	79.3		
250	74.7	76.6	80.1	80.5	80.8	81.0	82.8	84.8	86.5	87.4	88.2	88.5	85.8	79.7		
315	76.5	78.7	79.9	82.8	84.6	86.3	87.6	87.9	88.3	89.0	87.3	87.1	84.8	78.1		
400	74.4	77.6	79.2	83.3	82.9	84.6	85.7	86.1	86.1	87.4	87.6	86.8	83.9	77.4		
500	73.2	77.0	80.0	83.5	85.2	85.5	85.1	86.3	86.5	86.6	86.7	85.7	81.5	76.1		
630	75.6	82.8	82.8	83.7	84.8	85.8	86.6	86.9	86.3	86.9	87.1	85.6	82.6	76.2		
800	71.6	77.0	78.6	81.0	84.4	82.4	83.1	84.0	84.8	85.1	85.7	83.6	79.6	73.6		
1000	76.5	81.4	78.9	81.4	84.0	82.6	82.6	84.1	84.2	84.7	84.7	82.7	79.1	73.5		
1250	73.8	82.5	80.8	82.3	85.8	84.7	84.2	82.8	83.6	84.9	85.1	82.6	78.6	73.4		
1600	75.7	85.2	87.5	87.5	89.9	86.6	84.4	84.8	85.4	84.2	86.0	81.7	79.6	73.4		
2000	84.7	94.3	93.7	96.7	98.5	95.8	92.6	92.3	91.9	91.9	88.5	86.6	84.3	80.8		
2500	77.4	84.8	91.8	93.9	93.4	91.0	90.4	87.1	86.2	84.9	84.4	82.6	79.7	72.6		
3150	76.3	83.4	86.3	88.1	90.8	87.5	84.9	85.3	84.9	82.8	86.4	79.5	75.2	68.6		
4000	78.7	87.9	89.7	92.4	91.6	89.1	85.6	84.2	86.2	87.7	88.4	80.9	77.4	71.8		
5000	75.1	82.5	86.6	88.0	87.6	86.3	82.7	82.6	84.0	82.3	82.9	78.4	73.6	66.5		
6300	73.4	80.7	84.8	87.0	86.5	84.1	80.6	80.6	81.2	81.1	82.2	76.5	71.6	64.6		
8000	69.7	78.3	81.2	83.7	85.2	82.8	80.6	79.0	81.0	80.7	80.4	75.4	67.9	61.1		
10000	65.7	74.9	79.2	80.7	81.3	79.2	78.3	78.2	79.4	80.5	78.1	74.0	64.6	58.6		
OVERALL CALCULATED	90.1	97.6	99.2	101.5	102.5	100.5	99.4	99.3	99.6	100.1	100.2	99.4	97.9	92.9		
PND8	103.4	111.5	112.7	115.1	116.4	114.2	112.3	112.1	112.2	112.3	112.3	109.1	106.3	101.4		

Table A-XXXIII.

UNTREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

FREQ.	MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM., DAY)																ANGLES FROM INLET IN DEGREES (AND RADIANS)				PWL
	20,	30,	40,	50,	60,	70,	80,	90,	100,	110,	120,	130,	140,	150,	160,						
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)						
50	70.0	69.8	68.3	68.9	67.2	68.1	68.3	68.7	69.7	70.2	70.6	71.4	72.0	76.0	78.9						120.6
63	69.5	69.9	69.9	69.2	67.2	66.6	68.1	70.3	68.6	69.4	70.0	70.7	72.1	75.0	77.2						119.8
80	67.9	69.4	69.6	69.4	70.9	68.2	69.0	68.5	70.0	70.3	70.9	73.2	73.2	74.7	75.7						120.7
100	74.8	76.4	76.9	75.5	78.1	73.1	72.0	70.7	73.7	72.9	72.1	78.4	77.6	77.7	77.6						129.2
125	64.0	65.1	65.1	65.2	66.8	66.8	65.9	67.2	66.8	67.4	68.0	68.8	69.3	70.8	71.1						117.2
160	64.5	66.5	65.2	66.4	64.6	65.9	67.8	68.3	67.9	69.3	70.2	71.4	71.4	73.3	74.6						118.9
200	67.8	69.4	69.1	71.9	71.0	72.0	72.4	74.4	74.6	76.5	76.9	77.6	76.9	77.4	77.1						124.5
250	70.7	72.6	74.3	76.6	77.1	77.6	78.7	79.7	80.2	80.8	80.8	81.0	80.4	79.9	78.3						128.9
315	71.8	74.0	74.6	76.0	79.1	78.5	77.6	79.0	79.1	80.5	80.8	80.9	80.3	79.2	77.1						128.8
400	69.8	74.4	75.7	76.2	74.3	73.6	75.4	74.4	74.6	75.9	76.8	77.1	75.1	75.1	74.0						129.2
500	70.6	74.2	73.1	71.8	70.0	70.0	70.6	69.9	70.6	72.3	74.2	74.1	74.2	74.1	73.3						122.3
630	71.6	75.7	75.0	73.2	72.0	73.8	72.6	74.4	73.9	74.8	75.2	75.1	75.6	75.2	74.8						124.4
800	68.8	73.1	72.4	71.5	72.8	72.7	71.9	72.7	72.4	72.8	73.8	74.1	74.3	75.0	73.7						123.1
1000	70.3	73.8	75.2	74.8	72.6	72.8	71.7	72.4	72.3	73.5	74.8	75.9	75.4	73.9	72.5						123.9
1250	68.8	71.8	75.1	75.6	73.5	74.2	72.5	73.4	72.5	75.5	77.0	76.6	77.1	75.2	73.1						125.0
1600	71.2	76.6	77.9	76.8	76.4	77.2	74.3	75.0	74.6	76.6	78.1	78.2	78.5	76.9	76.1						127.0
2000	75.8	83.3	85.0	83.5	81.7	81.7	78.3	77.7	79.2	81.2	81.8	82.5	81.8	80.4	79.3						131.9
2500	84.0	89.9	92.8	89.1	89.2	88.1	84.9	83.5	87.8	89.6	88.0	88.9	87.6	87.6	84.3						138.9
3150	72.2	79.3	83.8	81.7	80.6	80.2	75.9	78.6	78.3	80.2	80.8	83.8	82.0	79.7	77.2						131.2
4000	70.1	81.0	81.2	82.1	81.9	80.0	79.7	78.3	81.6	81.8	85.2	86.1	83.6	79.5	76.9						132.9
5000	74.0	82.1	86.7	82.7	83.0	86.5	81.2	82.3	80.2	85.9	85.9	85.4	87.8	83.6	79.1						135.4
6300	69.9	80.7	82.4	82.1	81.2	80.0	77.0	78.3	78.8	80.9	83.7	85.9	84.2	78.6	76.1						132.9
8000	68.6	81.5	84.2	81.9	82.3	81.4	78.3	79.2	78.8	81.7	84.7	84.8	85.6	80.3	75.6						134.1
10000	68.0	80.7	81.9	80.0	79.3	78.8	74.6	75.5	75.8	78.3	80.9	81.5	82.2	76.7	72.8						131.9
12500	64.8	78.0	79.0	77.0	76.2	75.5	72.1	73.1	72.4	75.9	78.4	79.1	79.8	74.8	70.7						130.9
16000	63.1	76.6	77.9	75.6	74.9	73.4	69.8	69.9	69.5	72.4	75.5	77.8	78.0	73.0	69.0						130.5
20000	60.0	73.3	74.8	72.4	71.1	70.3	66.5	65.8	65.6	68.4	70.7	72.9	73.8	69.4	66.1						129.3
OVERALL MEASURED	89.0	95.1	97.3	95.0	95.0	94.9	92.3	92.5	93.8	95.7	96.1	96.7	96.4	94.8	92.9						
OVERALL CALCULATED	87.3	93.8	96.2	93.9	93.7	93.4	90.6	90.9	92.2	94.2	94.8	95.6	95.3	93.1	91.1						144.8
PND8	102.0	108.4	110.8	108.3	108.1	107.6	104.8	104.5	106.8	108.7	108.6	109.5	108.8	107.5	104.9						

Table A-XXXIV.

UNTREATED MOD II BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM, DAY)														
50	64.7	69.8	72.6	72.7	76.4	72.2	71.4	70.2	73.2	71.9	70.4	75.6	73.3	71.1	67.5
63	53.7	58.4	60.7	62.4	65.0	65.8	65.3	66.7	66.2	66.4	66.2	66.0	64.9	64.1	60.8
80	53.9	59.7	60.7	63.5	62.8	64.9	67.2	67.8	67.3	68.2	68.4	68.5	66.9	66.5	64.1
100	57.1	62.5	64.6	68.9	69.1	70.9	71.8	73.0	73.9	75.3	75.1	74.7	72.3	70.5	66.4
125	59.8	65.6	69.6	73.5	75.2	76.5	78.0	79.1	79.5	79.6	78.9	78.0	75.7	72.8	67.4
160	60.7	66.8	69.9	73.0	77.1	77.3	76.8	78.4	78.4	79.3	78.9	77.8	75.6	72.0	66.0
200	58.5	67.1	70.9	73.1	72.3	72.4	74.6	73.7	73.8	74.7	74.8	73.9	70.3	67.8	62.7
250	59.1	66.8	68.2	68.6	67.9	68.7	69.8	69.2	69.8	71.1	72.2	70.9	69.3	66.7	61.8
315	59.8	68.2	70.0	69.9	69.9	72.5	71.7	73.6	73.0	73.5	73.1	71.8	70.7	67.7	63.1
400	56.9	65.4	67.3	68.2	70.6	71.4	71.0	71.9	71.5	71.4	71.7	70.8	69.2	67.3	61.7
500	58.1	65.9	70.0	71.3	70.4	71.4	70.8	71.6	71.3	72.1	72.6	72.5	70.2	66.1	60.3
630	56.4	63.7	69.8	72.1	71.3	72.7	71.6	72.5	71.5	74.0	74.7	73.1	71.8	67.2	60.7
800	58.5	68.4	72.5	73.2	74.1	75.7	73.3	74.1	73.6	75.2	75.8	74.6	73.1	68.7	63.4
1000	62.8	75.0	79.5	79.8	79.4	80.2	77.2	76.8	78.1	79.6	79.5	78.9	76.3	72.1	66.3
1250	70.6	81.5	87.2	85.4	86.8	86.6	83.8	82.5	86.8	88.1	85.6	85.2	82.0	79.2	71.0
1600	58.5	70.8	78.2	78.0	78.2	78.6	74.8	77.8	77.2	78.6	78.4	80.0	76.4	71.1	63.5
2000	56.1	72.2	75.5	78.4	79.5	78.5	78.7	77.5	80.6	80.3	82.8	82.4	77.9	70.7	62.9
2500	59.5	73.1	80.8	78.9	80.5	84.9	80.1	81.4	79.1	84.3	83.5	81.5	81.9	74.5	64.7
3150	55.0	71.4	76.4	78.2	78.7	78.4	76.0	77.5	77.8	79.4	81.2	82.1	78.2	69.3	61.2
4000	52.9	71.9	78.1	78.1	79.9	80.0	77.4	76.5	77.9	80.3	82.4	80.9	79.4	70.7	60.0
5000	52.4	71.5	75.8	76.6	77.5	77.9	74.2	75.3	75.5	77.4	79.1	78.1	76.5	67.5	57.2
6300	48.2	68.4	73.3	73.8	74.7	75.0	72.2	73.4	72.5	75.4	76.9	76.0	74.2	65.2	54.1
8000	45.0	66.6	72.3	72.9	73.6	73.6	70.7	70.6	70.4	72.7	74.6	75.0	72.4	63.0	50.6
10000	39.7	62.6	69.3	70.1	70.6	71.4	68.3	67.9	67.4	69.4	70.4	70.6	68.3	58.7	45.8
OVERALL CALCULATED	74.3	85.2	90.6	90.2	91.4	92.0	89.6	90.0	91.2	92.8	92.5	92.0	89.6	84.6	77.9
PND8	84.0	96.4	102.3	102.1	103.3	105.2	102.1	103.0	102.4	105.4	105.4	104.9	103.1	96.4	87.9

Table A-XXXV.

UNTREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

72% FAN SPEED

MODEL	SOUND PRESSURE LEVELS (59 DEG. F., 70 PERCENT REL. HUM., DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)															RHL
	25.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	
FRQ.	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()
50	73.7	72.8	70.7	72.7	72.5	73.8	74.6	75.5	75.9	77.4	78.1	78.7	79.8	84.7	88.5	128.1
63	72.9	72.9	74.1	71.6	75.2	75.4	74.3	76.2	75.9	76.6	78.0	79.3	80.6	85.3	88.3	128.6
80	67.8	69.9	70.0	71.8	72.2	72.2	73.4	74.7	75.4	76.8	77.4	78.7	79.6	82.9	84.6	129.6
100	71.0	73.0	71.7	74.4	74.7	75.4	74.4	75.4	75.9	75.8	77.2	78.2	79.7	81.6	81.5	129.4
125	73.1	73.0	73.3	73.0	74.5	76.6	74.1	74.9	74.8	75.0	78.6	77.5	79.4	81.3	81.4	126.3
168	69.0	70.2	71.0	70.7	71.1	71.1	72.8	74.1	74.2	75.9	77.8	79.7	80.7	83.3	84.6	129.9
208	70.0	73.0	74.2	74.7	75.3	75.4	76.9	77.4	79.7	81.6	82.7	84.1	85.6	88.9	87.1	131.1
250	76.0	78.0	80.2	81.4	82.5	82.5	83.4	85.0	85.3	86.4	87.3	88.2	89.0	88.6	87.7	138.3
315	77.1	80.1	81.2	81.9	84.3	83.8	83.6	84.9	85.4	86.9	87.6	88.6	88.4	88.0	86.1	135.5
400	78.1	79.7	80.1	79.6	80.2	80.3	80.3	81.7	82.6	83.7	84.4	84.8	83.9	83.7	82.7	132.2
500	77.8	79.1	79.5	79.7	79.0	80.8	80.8	83.4	83.6	82.7	82.1	84.1	83.7	85.1	83.1	138.2
630	76.0	82.4	84.4	85.2	85.1	83.6	83.7	85.0	85.2	85.4	86.0	88.1	89.2	88.2	83.8	135.2
800	74.2	77.9	77.0	79.5	78.5	78.3	79.0	81.2	81.2	80.8	84.2	83.0	81.6	82.3	82.3	130.9
1000	74.5	78.0	80.1	79.5	79.7	81.6	79.0	80.2	80.8	80.8	82.8	84.3	82.1	81.7	80.4	131.1
1250	74.5	77.8	81.5	79.5	78.0	80.7	79.2	78.1	78.5	81.0	82.0	82.1	82.7	81.7	79.6	138.7
1600	74.5	79.7	84.6	82.6	81.0	82.5	79.4	81.7	78.5	81.2	81.6	81.1	81.6	81.1	79.7	133.7
2000	76.8	83.6	86.2	85.8	85.8	86.0	81.9	81.0	82.2	82.2	84.0	85.6	82.4	83.7	82.2	138.4
2500	77.4	89.2	89.1	87.2	86.0	88.1	83.2	83.9	84.1	83.3	86.1	88.0	84.4	84.3	82.0	138.8
3150	83.8	90.6	97.0	96.3	96.5	96.2	98.0	98.4	90.8	93.9	90.1	93.0	90.3	91.8	89.8	144.4
4000	74.8	88.8	87.4	88.6	87.3	88.3	85.9	83.1	86.7	86.8	89.3	89.6	89.4	82.9	81.8	137.6
5000	76.9	84.9	89.2	86.4	85.2	88.6	84.6	85.1	84.3	88.1	89.1	89.3	87.0	85.0	81.0	137.9
6300	77.2	88.8	94.0	91.0	89.0	87.8	85.6	85.8	88.3	88.9	90.7	93.4	88.7	85.4	84.1	140.9
8000	71.9	85.8	87.6	85.5	84.8	84.5	82.6	83.5	83.2	86.3	87.8	88.9	86.4	83.4	79.3	137.0
10000	71.0	89.6	88.1	84.2	83.9	85.2	80.5	81.4	81.9	86.0	87.2	89.1	85.2	81.6	78.3	137.3
12500	68.1	83.4	83.8	81.6	80.9	85.5	78.0	81.0	80.6	83.4	85.2	89.4	83.6	79.8	76.1	139.3
16000	65.9	81.2	82.4	80.1	79.8	77.0	75.7	70.5	77.2	80.3	83.0	84.9	82.7	75.2	74.7	138.9
20000	62.5	79.3	79.0	76.8	76.2	74.4	72.0	69.1	73.4	74.6	78.5	80.2	79.7	75.2	71.4	139.1
OVERALL MEASURED	93.9	98.1	102.5	101.3	101.2	102.3	102.3	97.9	97.1	98.8	101.7	101.2	102.5	100.8	100.2	
OVERALL CALCULATED	89.7	97.2	101.1	100.0	99.7	99.6	96.3	97.8	97.5	99.8	99.8	101.2	99.2	99.1	98.4	139.2
PND8	106.3	111.4	110.3	115.1	115.0	119.0	110.9	112.4	111.8	114.8	113.0	114.9	112.6	113.0	111.4	

Table A-XXXVI.

UNTREATED MOD II BLADES
SCALE MODEL - SCALED DATA
NOMINAL NOZZLE
200' SIDELINE
72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM, DAY)														
50	60.8	66.4	67.3	71.8	73.0	74.4	73.8	75.0	75.3	74.8	75.5	75.4	75.0	71.4	
63	62.8	66.3	68.9	70.2	72.8	75.6	73.5	74.4	74.2	74.0	76.9	74.6	75.0	74.6	71.1
80	58.5	63.4	66.5	67.8	69.3	70.0	72.2	73.6	73.5	74.8	76.0	76.8	76.2	76.5	74.3
100	59.9	66.0	69.6	71.7	73.4	74.3	76.2	78.8	79.0	80.5	80.8	81.1	81.1	80.0	76.4
125	65.1	70.9	75.5	78.4	80.6	81.3	82.6	84.5	84.6	85.2	85.4	85.2	84.3	81.5	76.8
150	66.0	72.9	76.4	78.8	82.4	82.6	82.9	84.2	84.6	85.7	85.7	85.5	83.6	80.8	75.0
200	64.8	72.4	75.3	76.4	78.2	79.0	79.5	81.1	81.8	82.4	82.4	81.6	79.1	76.4	71.4
250	66.0	71.7	74.6	76.5	77.0	79.5	80.0	82.7	82.7	81.4	80.0	80.9	78.8	77.6	71.6
315	64.3	74.9	79.4	82.0	83.0	82.3	82.9	84.2	84.4	84.1	83.9	84.8	80.5	78.6	72.0
400	62.3	70.2	71.9	76.1	76.4	76.9	78.1	80.4	80.3	79.4	82.0	79.6	76.8	74.6	70.4
500	62.3	70.2	74.9	76.1	77.5	80.1	78.1	79.4	79.1	79.4	80.6	80.9	76.9	73.9	68.3
630	62.1	69.8	76.2	78.0	76.5	79.3	78.2	78.2	77.6	79.5	79.8	78.6	77.5	73.7	67.1
800	61.6	71.5	79.2	79.1	78.7	81.0	78.4	80.8	77.4	79.7	79.3	77.5	76.4	73.0	67.0
1000	63.8	75.3	80.7	82.1	83.3	84.5	80.9	80.1	81.2	80.7	81.7	82.0	76.9	75.4	69.2
1250	64.0	76.7	83.5	83.5	84.4	86.6	82.2	83.0	83.0	83.7	83.7	84.3	78.8	75.8	68.6
1600	69.9	81.9	92.1	92.5	94.1	94.7	88.9	91.5	89.7	92.3	87.7	89.2	84.6	83.1	76.1
2000	60.8	77.2	81.7	84.9	85.0	83.7	84.9	82.3	85.7	84.5	86.9	85.9	79.6	74.1	67.7
2500	62.0	75.8	83.3	82.6	82.7	87.0	83.5	84.2	83.2	86.5	86.6	85.5	81.1	76.0	66.5
3150	62.3	79.6	85.0	87.2	86.6	86.3	84.6	85.0	87.3	87.4	88.2	89.5	82.7	76.1	69.2
4000	56.2	76.2	81.5	81.6	82.4	83.0	81.7	82.8	82.3	84.9	85.5	85.1	80.3	73.8	63.7
5000	55.4	76.3	80.4	80.8	82.0	82.3	80.0	81.3	81.6	85.2	85.3	85.7	79.5	72.4	62.7
6300	51.4	73.8	78.2	78.4	79.4	80.0	78.1	81.3	80.7	82.9	83.6	82.2	78.0	70.2	59.4
8000	47.4	71.1	76.9	77.4	78.5	78.1	76.6	77.6	78.1	80.5	82.1	82.1	77.1	68.2	56.6
10000	42.2	66.6	73.5	74.5	75.9	75.7	73.8	74.6	75.2	77.7	78.3	77.9	74.2	64.5	51.0
OVERALL CALCULATED	76.9	88.4	95.4	96.3	97.3	98.1	95.3	96.7	96.6	97.9	97.5	97.7	93.7	90.7	85.2
PN08	87.7	101.9	108.3	109.1	110.2	111.0	108.0	109.3	109.7	110.7	111.1	111.5	106.3	101.9	94.8

Table A-XXXVII.

UNTREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL	SOUND PRESSURE LEVELS (59 DEG. F., 70 PERCENT REL. HUM., DAY)											- ANGLES FROM INLET IN DEGREES (AND RADIANS)											RNL
FREQ.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.									
	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()	()	()	()	()	()	()	()
50	76.8	77.2	74.1	76.4	76.9	76.9	77.4	78.1	80.0	81.2	82.0	82.9	84.3	89.7	94.1								132.8
63	72.8	74.6	74.7	76.2	76.7	76.2	76.9	78.5	80.0	81.1	82.0	83.1	85.5	90.3	94.4								133.1
80	74.8	74.9	73.9	76.8	77.2	76.7	77.2	77.9	80.4	81.1	81.9	83.3	85.3	89.8	91.7								132.1
100	72.9	75.6	76.2	77.2	78.3	78.0	77.6	78.5	80.0	80.6	81.3	82.7	84.5	87.4	88.1								131.0
125	76.0	76.8	82.3	83.0	83.1	78.8	76.9	80.8	80.0	81.5	80.9	86.2	84.2	86.2	87.9								132.2
160	73.6	74.4	75.6	75.8	77.4	77.1	76.4	78.1	79.7	80.9	82.9	85.3	86.8	89.8	91.6								132.8
200	74.3	76.9	77.0	79.0	79.6	79.5	80.4	82.9	84.1	85.5	87.2	89.2	91.3	93.2	93.5								136.3
250	84.2	86.3	86.4	87.9	90.4	90.5	88.5	90.4	90.9	92.9	96.2	95.4	96.5	96.1	95.9								142.5
315	82.0	85.0	85.3	89.5	88.2	87.3	86.6	88.0	88.9	90.9	92.3	93.0	93.6	93.4	92.3								139.9
400	80.9	83.8	84.0	84.5	84.9	84.6	84.4	86.8	87.8	89.4	89.4	89.5	89.7	89.4	89.3								137.3
500	81.8	80.8	82.3	88.5	91.1	82.9	84.5	84.3	85.3	87.7	91.5	94.4	90.9	90.0	89.1								138.8
630	81.0	87.1	88.8	91.0	90.0	93.9	90.2	95.2	89.1	95.4	92.5	91.4	92.2	91.5	88.7								142.2
800	82.4	88.5	86.2	84.8	88.7	91.3	86.5	87.5	86.5	88.0	87.7	88.3	90.5	88.8	87.6								138.2
1000	89.7	89.9	93.7	92.6	93.1	95.9	96.5	90.3	93.2	89.3	91.7	90.0	94.2	91.1	88.3								143.2
1250	85.7	89.7	94.2	95.5	91.7	93.4	89.3	87.9	89.8	89.8	89.9	89.6	91.1	89.0	92.4								141.3
1600	89.1	89.1	92.0	97.5	99.9	102.5	98.6	96.0	92.4	89.9	91.4	89.5	89.7	89.0	90.6								146.8
2000	84.2	92.2	95.9	97.3	100.1	103.0	100.5	98.4	97.9	92.5	92.1	92.5	91.6	90.6	90.2								148.2
2500	85.7	93.1	96.2	95.5	99.8	102.9	98.5	95.9	92.8	94.0	91.9	94.9	91.6	91.1	89.6								147.4
3150	86.5	95.8	99.3	98.3	99.6	101.2	94.6	96.1	96.2	96.9	98.0	98.5	98.3	94.5	93.8								148.4
4000	82.9	99.0	96.2	97.0	97.6	95.8	95.7	93.4	94.9	95.3	97.7	97.1	92.8	91.9	91.4								146.5
5000	81.9	89.4	94.2	92.5	92.5	97.1	93.1	93.1	90.5	93.5	92.4	91.7	90.0	89.4	86.3								143.8
6300	79.6	90.7	92.9	92.2	92.9	92.3	91.0	90.3	91.8	93.7	95.1	95.7	90.1	87.5	86.3								143.9
8000	77.4	89.6	92.3	91.1	91.3	91.5	89.2	89.9	89.8	91.7	93.2	93.8	90.6	88.4	85.0								144.1
10000	75.8	88.0	90.0	88.9	89.9	89.3	87.4	87.4	87.6	89.9	92.1	93.2	88.5	85.6	83.8								142.2
12500	73.5	85.4	87.5	86.8	86.1	87.4	85.7	86.6	85.7	89.2	90.0	91.0	87.5	84.6	81.4								141.6
16000	71.9	83.3	85.8	85.0	86.7	85.2	83.4	84.3	84.1	87.7	89.2	90.2	87.6	83.4	80.4								142.2
20000	69.4	79.9	82.3	81.9	84.4	82.1	80.1	80.1	80.3	83.6	85.4	86.7	84.9	80.1	76.6								141.4
OVERALL MEASURED	98.3	104.6	107.2	108.0	109.7	111.7	108.7	107.2	106.4	107.0	107.9	108.2	107.0	106.8	106.8								
OVERALL CALCULATED	96.4	103.8	105.8	106.8	107.9	109.9	106.7	105.8	104.8	105.3	106.4	106.6	105.2	104.7	105.0								197.2
PNDR	109.9	117.0	120.1	119.9	121.2	122.9	119.5	118.6	116.4	119.1	120.4	120.5	118.3	117.6	117.1								

Table A-XXXVIII.
 UNTREATED MOD II BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG F, 70 PERCENT REL HUM, DAY)														
50	62.8	69.0	71.9	74.4	76.6	77.0	77.0	77.9	79.4	79.6	79.6	79.9	80.2	80.8	78.0
63	65.7	70.1	77.9	80.2	81.3	77.8	76.3	80.3	79.4	80.5	79.1	83.3	79.8	79.5	77.6
80	63.1	67.6	71.2	72.9	75.6	76.1	75.8	77.6	79.1	79.8	81.1	82.4	82.3	83.0	81.1
100	63.8	69.9	72.3	76.0	78.0	78.4	79.8	82.3	83.4	84.4	85.3	86.3	86.8	86.3	82.8
125	73.3	79.2	81.7	84.8	88.5	89.4	87.7	90.0	89.7	91.8	94.3	92.4	91.8	89.1	85.1
160	70.9	77.8	80.5	82.4	86.3	86.1	85.9	87.3	88.2	89.7	90.4	89.9	88.9	86.2	81.2
200	69.6	76.5	79.2	81.4	82.9	83.4	83.6	85.3	87.0	88.3	87.4	86.4	84.9	82.1	78.0
250	69.9	73.3	77.4	85.3	89.0	81.6	83.6	83.6	84.4	86.4	89.4	91.2	86.0	82.6	77.6
315	69.2	79.5	83.8	87.7	87.9	92.6	89.4	94.5	88.3	94.3	90.4	88.1	87.2	83.9	77.0
400	70.5	80.8	81.1	81.4	86.5	89.9	85.5	86.7	85.6	86.7	85.6	85.0	85.4	81.1	75.6
500	77.5	82.1	88.6	89.2	90.9	94.5	95.5	89.5	92.2	87.9	89.5	86.5	89.0	83.2	76.2
630	71.3	81.7	88.9	90.0	89.4	92.0	88.4	87.1	88.8	88.3	87.7	86.1	85.8	81.0	79.9
800	72.4	81.0	86.6	93.9	97.6	101.0	97.6	96.0	91.4	88.4	89.1	86.0	84.3	80.8	77.9
1000	71.1	83.9	90.4	93.6	97.8	101.5	99.4	97.5	96.8	90.9	89.8	88.9	86.1	82.3	77.2
1250	68.8	81.6	88.2	91.5	95.6	99.4	97.3	95.3	94.7	88.8	87.7	87.2	83.9	80.1	74.8
1600	71.8	84.2	90.3	91.6	97.3	101.2	97.2	94.8	92.6	92.3	89.3	91.0	85.7	82.2	75.8
2000	72.3	86.5	93.4	94.4	97.0	99.4	93.4	95.0	94.9	95.2	96.3	94.6	89.3	85.4	79.6
2500	68.3	85.8	90.2	93.0	95.0	94.1	94.4	92.3	93.7	93.6	95.1	93.1	86.7	82.7	76.8
3150	66.6	79.8	87.8	88.2	89.7	95.2	91.7	91.9	89.1	91.6	89.6	87.5	83.6	79.7	71.0
4000	63.3	80.5	86.2	88.7	89.9	90.3	89.6	89.0	90.3	91.7	92.1	91.2	83.4	77.3	70.1
5000	60.9	79.5	85.8	86.9	88.6	89.8	89.1	89.0	88.6	90.0	90.5	89.6	84.1	78.3	68.5
6300	58.0	77.2	83.1	84.5	87.2	87.6	86.3	86.5	86.5	88.3	89.4	88.8	81.6	74.8	65.1
8000	53.3	73.5	80.0	82.1	85.2	85.7	84.6	85.7	84.6	87.4	87.1	86.2	80.0	72.7	61.3
10000	49.0	70.1	77.7	80.2	83.9	83.7	82.6	83.8	83.3	86.1	86.4	85.3	79.5	70.1	57.5
OVERALL CALCULATED	83.8	94.4	100.3	102.7	105.8	108.8	106.2	105.1	104.2	103.8	104.0	102.9	99.8	96.5	92.0
PNOB	93.7	107.4	113.1	115.1	117.5	119.7	117.3	116.5	116.4	116.6	117.1	115.8	111.2	107.1	101.2

Table A-XXXIX.

UNTREATED MOD II BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PWL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	{ }	{ }
30	79.3	78.1	77.1	77.8	77.0	79.1	79.9	80.4	81.4	83.4	84.1	85.1	87.2	93.3	97.7		135.9
63	75.4	76.2	78.1	77.8	77.8	78.7	79.6	80.6	81.3	83.0	83.9	84.9	87.4	92.8	96.8		139.4
80	75.9	77.1	80.0	80.4	79.0	79.4	80.7	81.1	81.6	83.8	84.4	86.0	88.6	93.0	95.8		135.5
100	78.5	79.1	79.5	79.9	80.1	80.7	81.5	81.1	81.9	83.4	84.2	86.3	88.1	91.4	92.0		134.3
125	76.6	77.9	80.6	78.3	79.2	79.0	79.2	80.3	81.6	83.7	82.8	84.9	86.2	89.5	91.0		133.1
160	76.5	79.5	82.7	80.4	78.2	80.2	81.6	82.0	85.3	88.0	85.3	88.8	90.1	94.3	95.2		136.9
200	77.2	78.8	81.2	80.8	80.9	81.3	82.7	84.4	85.3	87.9	89.5	92.0	94.1	96.8	96.7		139.2
250	83.0	85.6	87.3	87.6	87.9	87.1	88.2	89.2	89.9	91.6	93.0	94.6	96.8	97.8	96.8		141.9
315	86.4	89.7	89.5	89.1	91.9	88.3	89.5	90.0	91.2	92.9	94.3	95.1	96.7	96.2	95.2		142.4
400	83.6	85.9	89.2	86.4	88.0	89.3	88.9	88.8	91.2	91.6	91.5	91.4	92.3	93.3	91.4		140.1
500	81.1	82.9	86.3	85.0	85.0	85.8	85.4	86.4	88.7	89.3	90.7	92.6	92.9	93.2	91.5		139.0
630	84.6	89.4	92.4	92.2	95.0	96.1	95.2	95.5	95.7	93.5	94.0	94.4	93.5	93.2	92.2		144.3
800	90.0	95.8	98.5	96.7	101.8	103.1	102.2	101.1	99.3	96.8	94.2	96.0	95.1	92.9	89.7		149.4
1000	93.9	94.9	99.7	108.4	109.8	112.1	110.2	109.1	104.1	101.3	103.1	96.5	95.7	99.2	90.9		157.1
1250	88.0	92.0	95.9	102.9	109.3	107.6	103.3	99.5	96.1	96.2	97.7	98.2	93.1	92.3	93.0		151.6
1600	87.5	89.9	97.5	100.0	103.7	102.4	100.9	99.6	94.9	94.5	95.9	94.5	97.0	93.5	93.4		149.2
2000	89.1	92.5	99.9	101.2	104.7	103.0	100.8	97.4	94.9	93.7	95.3	96.8	94.1	94.6	94.0		149.8
2500	87.9	94.1	98.8	95.7	98.9	103.7	98.8	96.5	94.2	95.4	93.9	93.9	93.7	92.5	90.3		147.9
3150	84.4	93.0	98.6	96.9	98.2	98.0	94.7	96.1	93.7	92.8	93.7	95.2	92.3	92.6	90.9		146.2
4000	85.1	96.6	90.5	100.3	101.7	98.7	99.3	97.6	102.4	100.4	102.0	102.9	96.7	94.8	94.4		150.9
5000	83.2	90.2	96.2	93.6	93.2	98.1	94.3	95.3	92.2	95.2	94.2	93.8	92.1	91.3	87.9		145.4
6300	81.3	91.6	94.9	95.1	95.1	94.3	92.4	93.0	92.2	94.1	94.8	95.6	90.7	89.4	87.9		145.0
8000	79.3	90.3	94.4	92.6	93.1	93.2	92.4	94.2	92.6	96.3	96.3	96.5	93.3	91.1	87.3		145.9
10000	78.3	88.5	92.1	90.8	92.1	91.8	89.4	89.9	89.3	91.5	92.8	92.8	89.3	87.1	84.2		143.6
12500	74.8	85.7	89.4	88.2	90.9	89.4	87.7	88.9	88.1	90.8	91.7	92.1	89.0	86.1	82.9		143.4
16000	73.1	83.5	88.2	86.3	90.8	87.5	86.2	87.1	86.9	89.7	91.7	92.6	88.9	85.4	81.8		144.7
20000	71.0	79.9	85.4	83.1	88.7	84.5	83.9	83.2	83.6	86.2	87.9	89.5	86.8	83.0	79.7		144.3
OVERALL MEASURED	101.3	109.1	110.2	113.5	115.5	117.0	114.9	113.6	110.9	110.0	110.9	110.6	109.2	109.8	109.4		
OVERALL CALCULATED	99.5	104.6	108.7	111.8	113.9	115.3	113.0	111.8	109.2	108.4	109.3	109.1	107.4	107.8	107.3		161.7
PNDB	111.0	118.3	121.5	122.6	124.3	125.1	122.7	121.8	122.7	122.0	123.0	123.5	120.2	119.5	118.6		

Table A-XL.
 UNTREATED MOD II BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)														
50	68.4	72.6	75.2	77.1	78.4	79.7	80.9	80.7	81.3	82.4	82.5	83.5	83.8	84.8	81.8
63	66.3	71.2	76.2	75.4	77.5	78.0	78.6	79.8	81.0	82.7	81.0	82.1	81.8	82.8	80.7
80	66.0	72.6	78.2	77.5	76.4	79.2	80.9	81.5	84.7	86.9	83.5	85.9	85.6	87.4	84.7
100	66.5	71.8	76.6	77.9	79.1	80.2	82.1	83.0	84.6	86.8	87.7	89.0	89.6	89.9	86.0
125	72.1	78.5	82.6	84.6	86.0	86.0	87.5	88.6	89.1	90.4	91.1	91.6	92.1	90.7	85.9
160	75.3	82.5	84.8	86.0	90.0	87.1	88.7	89.3	90.4	91.7	92.3	92.0	91.9	89.0	84.1
200	72.3	78.6	84.4	83.2	86.0	88.1	87.7	88.1	90.4	90.4	89.5	88.2	87.5	86.0	80.1
250	69.6	75.4	81.4	81.8	82.9	84.6	84.6	85.7	87.9	88.1	88.7	89.4	88.0	85.7	80.0
315	72.9	81.8	87.4	88.9	92.9	94.8	94.4	94.7	94.8	92.2	91.9	91.1	88.5	85.6	80.4
400	78.1	88.1	93.5	93.4	99.7	101.7	101.3	100.3	98.4	95.4	92.1	92.7	90.0	85.2	77.8
500	81.8	87.1	94.5	105.0	107.6	110.7	109.3	108.3	103.1	99.9	101.0	93.0	90.5	91.4	78.7
630	75.5	84.0	90.6	99.4	103.0	106.2	102.3	98.7	95.1	94.8	95.5	94.7	87.8	84.3	80.6
800	74.8	81.8	92.1	96.4	101.4	100.9	99.9	98.7	93.8	93.0	93.6	91.0	91.6	85.4	80.7
1000	76.1	84.2	94.4	97.6	102.4	101.5	99.7	96.5	93.9	92.1	92.9	93.2	88.6	86.3	81.0
1250	74.6	85.6	91.2	92.0	96.5	102.2	97.7	95.5	93.1	93.8	91.5	90.3	88.1	84.0	77.0
1600	72.1	84.3	92.9	93.2	95.8	100.0	95.6	95.2	92.6	91.7	91.3	91.5	86.6	83.9	77.3
2000	71.1	88.0	92.8	96.6	99.4	97.8	98.3	96.7	101.4	98.9	99.6	99.1	90.9	85.9	80.4
2500	68.8	81.2	90.3	89.8	90.7	96.5	93.2	94.4	91.1	93.7	91.7	89.9	86.2	82.3	73.5
3150	66.4	82.4	88.9	91.3	92.7	93.3	91.4	92.2	91.2	92.6	92.3	91.7	84.7	80.1	73.0
4000	63.7	80.7	88.3	88.8	90.7	91.8	91.5	93.5	91.8	94.9	94.0	92.7	87.2	81.5	71.7
5000	62.7	79.2	86.4	87.4	90.3	90.8	89.1	89.8	89.0	90.7	90.9	89.4	83.6	77.8	68.6
6300	58.2	76.1	85.9	85.0	89.4	89.0	87.8	89.2	88.2	90.3	90.2	88.9	83.4	76.5	66.3
8000	55.0	73.5	82.6	83.5	89.9	87.7	87.1	88.1	87.8	90.0	90.8	89.9	83.3	75.4	63.6
10000	50.7	69.2	79.9	80.8	88.5	85.6	85.3	85.4	87.3	87.7	87.2	81.3	72.3	59.4	
OVERALL CALCULATED	87.1	96.3	103.2	108.3	111.7	114.0	112.1	111.0	108.3	107.0	107.1	105.5	102.0	99.7	94.3
PNOB	95.8	108.2	114.5	117.7	120.8	122.8	121.3	120.7	120.3	119.5	119.5	118.7	113.2	109.1	102.6

Table A-XLI.

UNTREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

MODE	SOUND PRESSURE LEVELS (99 DEC. F, 70 PERCENT REL. HUM, DAY)	ANGLES FROM INLET IN DEGREES (AND RADIANS)														
FREQ.	20. (0.35)	30. (0.52)	40. (0.70)	50. (0.87)	60. (1.05)	70. (1.22)	80. (1.40)	90. (1.57)	100. (1.75)	110. (1.92)	120. (2.09)	130. (2.27)	140. (2.44)	150. (2.62)	160. (2.79)	WHL
50	71.1	70.2	69.5	70.7	70.1	68.7	70.2	70.5	71.8	71.9	71.7	73.4	74.2	76.1	80.4	123.1
63	68.4	65.4	67.3	67.0	67.1	65.9	67.8	68.8	73.3	69.8	70.0	71.5	72.6	74.7	78.3	120.4
80	65.7	66.3	67.2	67.8	71.1	72.7	71.5	73.7	72.9	71.9	72.5	74.6	73.3	74.2	76.7	122.1
100	72.0	73.1	72.1	71.6	76.0	78.2	76.1	79.0	77.6	78.0	79.5	78.6	74.2	75.8	76.3	128.1
125	65.9	64.6	66.2	64.9	66.6	63.4	65.3	66.4	66.8	67.6	68.5	69.4	70.1	70.9	74.3	117.6
160	65.3	66.1	69.2	69.8	69.7	68.0	70.9	70.4	68.3	70.2	71.9	73.9	73.1	75.2	76.9	121.1
200	69.8	72.0	76.6	78.2	77.7	75.5	78.4	78.0	74.0	76.2	78.4	79.7	78.5	79.6	78.7	127.3
250	68.8	72.2	76.0	78.1	76.9	76.5	76.2	78.8	79.8	79.8	79.9	80.8	80.8	80.7	78.8	128.9
315	70.7	72.3	74.6	76.0	77.1	76.2	75.8	77.3	78.6	79.6	80.1	80.0	79.6	78.5	76.3	127.7
400	69.7	73.8	74.4	71.7	73.8	71.4	73.1	73.4	73.3	75.2	75.3	74.9	74.6	75.9	72.4	123.8
500	68.7	72.2	71.3	70.2	71.9	70.1	70.3	71.4	71.7	72.9	73.9	74.7	74.6	74.1	73.6	122.4
630	70.5	73.2	74.4	74.0	73.0	74.2	74.1	74.5	74.4	75.5	75.8	75.5	74.9	74.5	74.3	124.6
800	68.8	70.6	72.0	70.7	71.9	71.7	71.8	73.9	72.3	73.6	74.4	75.1	74.7	73.9	73.4	123.9
1000	69.0	71.7	73.7	73.3	73.3	73.0	72.8	72.9	73.4	74.7	76.6	76.8	75.9	74.1	73.3	124.3
1250	68.9	70.1	73.7	73.7	73.0	72.3	72.8	72.5	73.7	75.1	77.6	77.8	76.7	74.4	73.6	124.6
1600	70.0	72.5	76.8	74.1	74.1	75.0	73.8	73.1	74.7	75.8	78.2	79.4	77.4	75.2	74.5	126.1
2000	70.7	79.7	82.4	79.6	80.0	81.5	77.2	76.9	78.3	81.0	82.4	84.5	82.2	80.1	78.5	131.2
2500	84.8	90.9	93.1	90.8	90.8	91.2	86.5	86.6	87.2	89.7	91.7	93.8	91.8	89.7	88.4	141.0
3150	71.8	78.0	81.3	78.9	78.2	79.8	78.0	80.2	79.4	80.3	83.7	84.2	81.0	77.0	76.4	131.1
4000	73.8	79.3	80.4	78.1	80.8	81.0	79.4	78.5	81.0	84.7	85.5	88.0	82.7	79.7	75.5	133.2
5000	77.2	82.7	87.6	87.1	86.9	84.7	84.8	88.9	84.0	84.7	88.1	90.3	86.6	85.1	81.5	137.3
6300	74.7	80.4	82.0	80.5	80.0	80.5	79.7	80.2	83.1	85.9	87.5	83.8	78.8	77.6		137.8
8000	75.5	80.5	83.4	80.4	80.8	80.3	80.7	75.7	80.0	82.6	85.4	86.8	85.2	80.2	76.0	134.4
10000	75.8	80.0	81.3	88.4	78.2	78.4	76.9	75.8	78.0	80.2	84.1	83.9	81.9	77.6	74.8	138.9
12000	74.6	77.8	79.9	78.5	79.8	75.1	74.8	74.2	76.3	78.1	80.5	81.7	79.4	76.2	72.1	133.1
14000	73.8	76.3	76.7	74.6	74.0	72.3	72.0	72.8	72.3	74.8	76.9	79.2	77.1	73.9	70.9	131.0
20000	68.7	73.0	73.3	71.4	70.9	68.5	68.8	66.6	69.2	71.7	73.0	75.7	73.6	71.1	68.1	130.2
OVERALL MEASURED	90.1	95.2	97.7	95.9	96.0	95.9	93.6	92.7	94.3	94.2	96.1	97.6	99.6	94.4		
OVERALL CALCULATED	88.2	93.6	96.1	94.2	94.4	94.3	92.1	92.1	92.7	94.6	96.7	98.5	96.3	93.9	92.7	148.8
WHL	103.0	108.2	110.6	108.6	109.0	109.1	106.2	106.3	106.9	109.0	111.0	112.7	110.7	108.5	107.1	

Table A-XLII.
 UNTREATED MOD III BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DFG, F. 70 PERCENT REL. HUM, DAY)														
50	61.8	66.5	67.8	68.8	74.3	77.2	75.5	78.6	77.1	74.0	73.8	75.9	69.9	69.2	66.2
63	55.3	57.9	61.8	62.0	64.9	64.4	64.8	65.9	66.2	66.6	66.8	66.6	65.7	64.2	64.0
80	54.7	59.3	64.7	66.9	67.9	66.9	70.2	69.9	67.6	69.1	70.1	71.0	68.6	66.4	66.4
100	59.1	65.1	72.1	75.2	75.9	74.4	77.7	77.5	73.4	75.1	76.5	76.7	73.9	72.7	66.0
125	58.9	65.1	71.4	75.1	75.1	75.3	75.5	78.3	79.0	78.6	78.1	77.7	76.1	73.7	67.9
160	59.6	65.1	69.9	72.9	75.2	75.0	75.0	76.6	77.8	78.4	78.1	76.9	74.8	71.3	65.2
200	58.6	66.5	69.6	68.5	71.0	70.2	72.3	72.8	72.5	73.9	73.3	71.8	69.7	68.6	61.1
250	57.4	64.8	66.3	67.0	69.5	68.8	69.5	70.7	70.9	71.6	71.8	71.5	69.7	66.7	62.1
315	58.8	63.7	69.4	70.7	70.9	72.8	73.3	73.8	73.5	74.2	73.7	72.2	69.9	67.0	62.6
400	56.8	62.9	67.0	67.3	69.7	70.4	70.9	71.1	71.3	72.2	72.3	71.8	69.6	66.2	61.4
500	57.4	63.9	68.5	69.8	71.1	71.6	71.9	72.1	72.4	73.3	74.4	73.5	70.3	66.3	61.1
630	56.1	62.1	68.4	70.3	70.7	70.9	71.8	71.6	72.7	73.7	75.3	74.3	71.4	66.4	61.1
800	57.2	64.3	71.5	70.5	71.8	73.5	72.8	72.2	73.7	74.3	75.9	75.8	72.1	67.1	61.7
1000	62.6	71.4	77.2	76.0	77.7	79.9	76.2	76.0	77.2	79.5	80.2	80.9	76.7	71.8	65.5
1250	71.2	82.4	87.5	86.8	88.5	89.7	85.4	85.7	86.2	88.1	89.3	90.1	86.2	81.2	75.1
1600	58.1	67.4	75.6	75.1	75.8	78.2	76.9	79.3	78.4	78.7	81.3	80.5	75.3	68.3	62.7
2000	59.5	70.5	74.9	74.3	78.4	79.4	78.4	77.7	79.9	83.2	82.6	84.2	77.0	70.8	61.5
2500	62.8	73.7	81.7	83.2	84.5	83.2	83.8	82.0	83.0	83.1	85.6	86.4	82.9	76.0	67.0
3150	58.8	71.1	76.0	76.6	77.5	78.9	78.1	78.9	79.2	81.6	83.5	83.6	77.8	69.5	62.6
4000	59.8	70.9	77.3	76.6	78.4	78.9	79.8	79.0	79.1	81.2	83.1	82.9	79.1	70.6	60.4
5000	59.9	70.7	75.6	77.0	76.7	77.5	76.6	76.7	77.7	79.4	81.2	80.5	76.2	68.4	59.2
6300	57.9	68.2	73.3	73.3	74.3	74.6	74.9	74.5	76.4	77.6	79.0	78.6	73.7	66.6	55.5
8000	54.9	66.3	71.2	71.9	73.1	72.5	72.9	71.9	73.2	75.0	76.0	76.4	71.5	63.9	52.8
10000	46.5	62.3	67.8	69.3	70.7	69.6	70.6	68.7	71.0	72.8	72.7	73.4	68.1	60.4	47.7
OVERALL CALCULATED	74.9	84.9	90.4	90.6	92.1	92.8	91.1	91.3	91.7	93.2	94.4	94.8	90.7	85.4	79.3
PNDR	85.9	96.2	102.3	103.3	104.6	104.4	104.4	103.7	104.5	105.5	107.1	107.5	103.5	97.2	89.3

Table A-XLIII.

UNTREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

72% FAN SPEED

MODEL SOUND PRESSURE LEVELS (99 DB, F, 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PWL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	
50	76.1	74.9	74.8	74.6	76.0	76.2	77.3	77.5	78.7	79.5	80.0	81.3	84.3	88.5	92.4		131.6
63	71.4	69.6	74.1	74.8	75.1	74.6	75.9	76.2	78.4	79.1	79.1	81.2	84.1	87.8	91.7		130.9
80	70.4	71.8	74.2	74.5	75.1	75.0	76.4	76.9	78.1	79.4	80.3	81.6	83.9	86.6	88.8		130.0
100	74.4	75.9	77.2	77.1	78.3	78.4	78.6	78.6	79.3	80.4	81.4	82.6	84.6	86.7	86.7		130.7
125	76.9	78.4	77.8	76.5	79.4	78.9	78.4	77.5	76.7	77.5	80.3	80.2	82.5	84.2	86.0		129.7
160	71.7	72.6	74.1	72.3	73.4	73.5	75.3	75.9	76.7	78.8	80.6	83.2	85.1	88.3	89.3		130.7
200	72.3	74.5	77.1	76.6	76.9	77.5	79.6	80.8	82.0	83.7	85.3	87.4	89.5	91.8	90.8		134.5
250	78.7	79.3	81.9	81.4	82.2	82.4	85.0	84.7	86.8	90.0	89.3	91.1	92.6	92.3	91.1		137.8
315	79.4	81.3	83.3	82.4	83.9	83.4	83.2	84.0	85.6	86.8	87.6	89.2	89.9	90.1	88.7		136.1
400	78.0	80.4	81.6	79.2	81.9	83.7	81.4	81.0	81.7	82.9	84.0	84.8	85.6	85.6	84.3		132.8
500	76.0	77.4	78.6	79.7	80.9	78.5	79.2	80.6	80.7	82.4	83.8	85.0	85.9	85.7	84.5		132.1
630	74.8	80.3	81.9	81.9	82.3	85.4	84.3	85.2	85.1	86.5	87.1	86.3	86.4	86.3	84.8		139.0
800	77.6	81.9	84.1	83.5	86.1	86.9	84.8	84.3	86.6	86.8	87.6	86.6	85.8	85.6	83.6		135.8
1000	79.4	83.8	86.0	88.9	86.5	89.0	87.7	86.4	86.3	87.0	87.6	87.6	88.1	87.6	85.6		137.4
1250	80.8	82.9	88.1	92.7	91.2	92.4	90.8	89.8	87.0	86.1	87.4	88.8	89.3	89.1	87.3		139.8
1600	76.0	77.9	83.5	86.7	85.3	87.0	85.5	84.2	83.2	82.6	84.5	85.5	84.0	83.2	82.5		134.9
2000	84.6	88.5	94.2	90.4	90.4	94.7	88.5	86.3	85.0	86.1	87.0	88.1	86.4	86.5	86.6		140.1
2500	79.2	85.1	88.4	87.6	88.6	90.3	87.6	87.4	85.7	85.9	87.5	88.5	85.0	85.3	84.6		138.0
3150	87.8	91.3	99.1	95.6	94.1	100.0	96.2	97.7	95.5	95.7	98.7	99.4	93.7	91.4	91.9		147.5
4000	82.9	88.6	91.4	89.4	94.8	96.1	94.1	92.2	90.9	93.0	91.8	93.9	88.2	88.2	84.0		143.4
5000	79.7	85.1	90.5	90.9	90.6	89.5	90.8	89.2	88.8	88.4	91.0	91.0	86.9	87.1	84.3		140.6
6300	63.2	90.2	98.6	90.2	89.7	90.7	89.2	90.8	91.5	94.2	95.5	96.8	89.9	87.9	86.3		143.5
8000	80.6	86.7	89.1	87.3	87.6	86.9	87.9	87.4	87.4	88.4	89.8	91.2	87.5	86.3	81.8		140.0
10000	81.8	87.3	88.3	87.7	86.1	85.9	85.6	86.5	87.7	90.5	92.7	93.9	88.8	86.1	82.8		141.8
12500	81.2	84.8	86.0	84.3	83.7	83.2	83.8	85.0	87.0	88.3	89.8	90.5	85.8	84.0	79.9		140.5
16000	79.4	82.7	84.2	82.4	81.6	80.9	80.7	81.5	83.8	85.7	87.5	88.1	84.5	82.1	78.6		140.0
20000	75.2	79.3	81.1	79.6	78.9	77.6	77.5	77.5	81.1	82.8	84.2	85.2	82.3	79.1	75.8		139.6
OVERALL MEASURED	96.4	101.0	105.5	103.8	103.9	109.5	104.3	104.4	103.8	104.7	106.3	107.0	105.2	104.0	103.3		
OVERALL CALCULATED	94.4	98.7	103.0	101.6	101.6	104.2	101.8	101.7	101.2	102.4	104.0	104.9	102.0	102.0	101.7		153.7
PWDS	106.7	112.6	118.0	116.0	115.8	119.1	116.5	117.1	115.8	116.5	118.6	119.4	115.6	114.7	114.1		

Table A-XLIV.

UNTREATED MOD III BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG F, 70 PERCENT REL. HUM, DAY)														
50	64.3	69.3	72.8	74.4	76.6	77.4	78.1	78.2	78.7	79.4	79.7	79.9	80.3	80.1	76.5
63	66.6	71.7	73.4	73.6	77.6	77.9	77.8	79.0	76.1	76.5	78.6	77.3	78.1	77.5	75.7
80	61.2	65.8	69.6	69.4	71.6	72.4	74.6	75.4	76.1	77.8	78.8	80.3	80.6	81.4	78.7
100	61.6	67.5	72.5	73.7	75.0	76.4	78.9	80.2	81.3	82.6	83.5	84.4	84.9	84.8	80.1
125	67.8	72.2	77.3	78.3	80.3	81.2	84.3	84.1	86.1	88.9	87.5	88.0	87.9	85.2	80.2
160	68.3	74.1	78.6	79.3	82.0	82.2	82.4	83.3	84.8	85.6	85.9	86.1	85.2	82.9	77.6
200	66.7	73.1	76.8	76.0	78.9	81.5	80.8	80.4	80.9	81.6	82.0	81.6	80.7	78.3	73.0
250	64.5	70.0	73.7	76.5	78.8	77.3	78.4	79.9	79.8	81.1	81.8	81.8	81.0	78.3	73.0
315	65.0	72.7	76.9	78.6	80.2	84.1	83.4	84.5	84.2	85.2	85.0	83.1	81.4	78.7	73.0
400	65.7	74.2	79.0	80.1	84.0	85.6	83.8	83.5	85.7	85.4	85.5	83.3	80.8	77.9	71.6
500	67.2	75.9	80.8	85.5	84.3	87.6	86.7	85.6	85.4	85.6	85.4	84.2	82.9	79.7	73.4
630	68.4	74.9	82.8	89.2	88.9	90.9	89.8	89.0	86.0	84.6	85.1	85.1	84.0	81.1	74.8
800	63.2	69.7	78.1	83.2	83.0	85.5	84.5	83.3	82.1	81.1	82.2	82.0	78.6	75.0	69.8
1000	71.6	80.1	88.7	86.8	88.0	93.2	87.5	85.4	84.0	84.5	84.6	84.5	80.9	78.5	73.6
1250	69.2	77.9	86.5	84.6	86.2	91.0	86.5	86.5	84.7	84.4	85.1	84.8	79.5	76.8	71.3
1600	74.1	82.7	93.4	91.9	91.6	98.4	95.1	96.8	94.4	94.2	96.3	95.7	88.0	82.8	78.2
2000	68.9	79.8	85.6	85.7	92.4	94.6	93.1	91.4	89.9	91.5	89.4	90.1	82.4	79.4	70.0
2500	65.2	76.0	84.6	87.1	88.1	88.2	89.8	88.3	87.7	86.8	88.5	87.2	81.0	78.0	69.9
3150	68.3	80.9	84.6	86.3	87.3	89.1	88.2	89.9	90.5	92.7	93.1	92.9	83.9	78.6	71.4
4000	65.0	77.1	83.0	83.4	85.2	85.5	87.0	86.7	86.5	86.9	87.4	87.4	81.4	76.7	66.1
5000	66.2	78.0	82.6	84.3	84.3	85.0	85.3	86.3	87.4	89.6	90.8	90.5	83.1	76.8	67.2
6300	64.5	75.1	80.3	81.1	82.2	82.8	83.9	85.3	87.1	87.8	88.3	87.3	80.2	74.4	63.3
8000	61.3	72.6	78.7	79.6	80.7	81.1	81.6	82.6	84.6	85.9	86.6	85.4	79.0	72.1	60.5
10000	54.8	68.6	75.6	77.3	78.7	78.7	79.6	79.6	82.9	83.8	84.0	82.9	76.8	68.4	55.5
OVERALL CALCULATED	81.1	90.1	97.5	98.0	99.3	102.8	100.9	101.1	100.3	101.1	101.7	101.3	96.6	93.7	88.5
PNOB	92.9	103.4	110.2	110.3	112.2	115.1	113.3	114.0	113.5	114.8	115.2	114.9	108.4	104.1	97.7

Table A-XLV.

UNTREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL	SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIAN)																PWL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()
50	77.8	75.6	73.9	76.2	77.1	77.6	78.8	79.6	80.9	81.5	81.9	83.1	86.1	90.5	94.9		133.6
63	73.9	73.4	74.5	75.7	77.3	76.5	77.6	78.6	79.9	80.7	81.9	83.3	85.8	89.8	93.6		132.8
80	73.8	74.4	74.6	77.0	77.9	77.1	78.6	79.2	80.2	81.5	82.6	83.9	86.5	89.5	92.0		132.7
100	74.1	76.0	75.7	76.7	77.9	77.8	78.7	79.2	79.9	80.9	81.5	82.8	85.0	87.5	87.6		131.1
125	76.6	76.0	83.2	83.5	81.3	80.6	76.5	81.6	79.5	80.0	81.5	83.7	85.8	86.7	88.3		132.2
160	76.1	74.7	76.2	76.0	76.1	76.0	77.0	78.5	79.5	81.0	82.6	85.4	87.2	90.6	91.6		133.0
200	74.6	76.2	77.5	77.5	77.4	78.7	80.9	82.1	83.4	85.4	87.0	89.5	91.8	94.0	93.6		136.6
250	80.1	81.7	83.6	83.5	84.4	84.4	84.4	87.4	88.5	91.1	92.7	94.5	95.3	95.7	94.1		140.4
315	81.9	83.8	84.7	84.0	85.3	84.9	84.6	85.9	87.4	89.1	90.3	91.8	93.0	93.2	91.8		138.6
400	79.8	82.9	84.4	82.4	82.4	82.6	82.8	83.5	84.3	85.4	87.2	87.1	88.6	89.0	87.6		135.2
500	80.1	79.7	81.3	84.4	87.0	81.2	81.0	82.0	82.8	85.0	86.1	89.2	89.2	89.3	88.4		135.5
630	83.9	85.7	85.7	85.8	87.5	85.9	85.5	91.2	89.4	88.6	90.8	94.2	91.2	90.7	88.2		139.7
800	79.7	83.0	85.4	91.1	88.5	84.8	85.4	89.3	87.2	87.5	88.2	90.1	90.8	89.5	87.1		138.3
1000	81.8	84.3	84.7	88.9	88.4	91.3	91.4	89.6	88.3	88.6	88.7	89.7	89.7	88.2	86.3		139.3
1250	81.2	85.1	86.9	90.7	92.7	89.7	91.9	88.2	90.9	88.2	90.2	93.3	89.7	87.7	88.0		140.5
1600	85.3	87.2	90.9	97.1	97.1	100.8	100.2	94.7	97.3	94.8	94.1	90.9	91.3	87.4	89.6		146.6
2000	85.8	90.0	94.7	93.3	98.7	103.8	98.6	94.4	97.0	94.0	94.1	94.2	94.1	88.6	87.9		147.6
2500	83.1	86.5	89.6	92.2	95.3	99.7	94.2	95.7	91.2	90.2	90.7	93.9	90.8	89.6	88.0		144.4
3150	88.6	92.1	98.2	95.7	97.9	100.3	97.4	97.1	96.5	99.2	100.7	98.7	94.4	92.2	91.8		148.4
4000	86.2	90.5	94.9	91.6	95.7	98.0	94.4	93.4	94.1	97.0	96.9	96.9	91.9	90.7	88.0		145.9
5000	88.7	84.9	91.5	91.9	91.6	93.7	94.0	93.4	90.5	90.3	92.2	92.0	89.0	88.3	85.7		142.9
6300	83.1	88.5	90.9	90.8	91.4	92.8	91.1	91.9	91.5	94.6	96.2	96.6	90.1	88.0	86.9		144.1
8000	81.8	86.0	90.5	88.3	90.0	90.3	90.6	90.2	89.6	91.3	93.0	94.2	90.4	87.9	83.6		142.6
10000	82.1	85.7	88.9	88.4	88.3	88.6	88.1	88.5	89.0	90.5	92.3	95.6	89.0	86.5	83.9		142.7
12500	81.7	83.6	86.8	85.4	85.9	85.9	86.2	86.8	88.0	89.3	91.4	92.2	87.3	85.0	81.4		141.9
16000	79.8	81.5	84.6	83.2	83.6	83.9	83.5	84.1	86.1	88.0	90.0	90.8	87.1	83.5	80.4		142.2
20000	75.4	78.0	81.3	80.4	80.7	80.8	80.6	80.2	83.0	85.1	86.5	87.9	84.8	80.5	77.4		141.7
OVERALL MEASURED	97.9	101.0	105.2	109.3	107.3	109.9	107.6	106.0	106.2	106.9	108.0	108.3	106.4	106.0	105.9		
OVERALL CALCULATED	96.3	99.6	103.6	103.8	105.6	108.7	107.1	106.5	104.8	105.4	108.5	106.9	104.7	104.2	104.1		156.5
PND3	110.3	113.6	118.3	117.4	119.3	121.6	119.1	118.6	118.4	119.9	121.1	120.7	117.8	116.3	115.6		

Table A-XLVI.
 UNTREATED MOD III BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)														
50	63.9	69.4	71.3	73.9	76.2	76.8	78.1	78.7	79.3	79.9	79.8	80.0	80.7	80.9	77.7
63	66.3	69.3	78.8	80.7	79.5	79.6	75.9	81.1	78.9	79.0	79.7	80.9	81.4	80.0	78.0
80	65.6	67.9	71.7	73.1	74.3	75.0	76.4	78.0	78.8	79.9	80.8	82.5	82.7	83.7	81.1
100	64.1	69.3	72.9	74.5	75.6	77.6	80.2	81.5	82.7	84.3	85.1	86.5	87.3	87.0	82.9
125	69.2	74.6	79.0	80.4	82.5	83.3	83.7	86.9	87.8	89.9	90.8	91.5	90.6	88.6	83.2
160	70.8	76.6	79.9	81.0	83.4	83.8	83.9	85.2	86.7	87.9	88.3	88.8	88.2	86.0	80.7
200	68.5	75.6	79.5	79.2	80.4	81.3	82.0	82.9	83.5	84.1	85.2	84.0	83.8	81.7	76.5
250	68.6	72.2	76.4	81.2	84.9	80.0	80.2	81.3	81.9	83.7	84.1	86.0	84.3	81.9	76.9
315	72.1	78.2	80.7	82.5	85.4	84.6	88.6	90.5	88.5	87.3	88.7	90.9	86.2	83.1	76.4
400	67.8	75.3	80.3	87.8	86.3	83.5	84.5	88.5	86.3	86.1	86.0	86.8	85.7	81.8	75.2
500	69.6	76.5	79.5	85.5	86.2	89.9	90.4	88.8	87.3	87.2	86.5	86.3	84.5	80.4	74.1
630	68.8	77.1	81.6	87.2	90.5	88.3	90.9	87.4	89.9	86.8	88.0	89.8	84.5	79.7	75.5
800	72.5	79.1	85.5	93.6	94.8	99.3	99.2	93.8	96.3	93.3	91.8	87.3	85.9	79.3	76.9
1000	72.7	81.7	89.2	89.7	96.4	102.3	97.5	93.5	95.9	92.5	91.7	90.5	88.6	80.3	74.9
1250	70.3	79.4	87.0	87.5	94.2	100.1	95.4	91.4	93.8	90.3	89.6	88.4	86.4	78.0	72.5
1600	69.3	77.7	84.7	88.3	92.8	98.0	93.3	94.7	91.6	88.4	88.1	90.0	85.0	80.8	74.2
2000	74.3	83.1	92.3	91.8	95.2	98.6	96.1	96.0	95.3	97.5	98.1	94.8	88.4	83.2	77.5
2500	71.6	81.4	88.9	87.7	93.1	96.3	93.2	92.3	92.9	95.3	94.3	92.9	85.8	81.5	73.4
3150	65.4	75.3	85.1	87.6	88.8	91.7	92.6	90.2	89.1	88.4	89.4	87.8	82.6	78.6	70.4
4000	66.9	78.3	84.2	86.4	88.4	90.7	89.6	90.6	90.0	92.6	93.2	92.2	83.4	77.8	70.6
5000	65.4	75.9	83.9	84.1	87.3	88.6	89.4	89.2	88.4	89.6	90.4	90.0	83.9	77.8	67.4
6300	64.2	74.9	82.0	84.0	85.5	86.9	87.0	87.6	87.9	88.8	89.6	91.2	82.1	75.7	66.0
8000	61.6	71.6	79.3	80.7	83.0	84.2	85.1	86.0	86.9	87.6	88.5	87.5	79.8	73.0	61.3
10000	56.9	68.2	76.5	78.3	80.7	82.3	82.7	83.6	85.3	86.4	87.1	85.9	79.0	70.3	57.5
OVERALL CALCULATED	83.0	91.0	98.1	100.2	103.7	107.8	105.4	103.7	104.1	103.9	104.0	103.1	99.3	96.0	90.9
PND8	94.9	103.7	111.3	112.4	115.6	118.5	116.8	116.4	116.2	117.1	117.5	116.1	110.7	106.0	99.7

Table A-XLVII.

UNTREATED MOD III BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODE: SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																
	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	PWL
FREQ.	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()
50	79.4	77.4	79.0	78.4	82.5	79.6	81.1	81.7	82.6	83.8	84.0	85.7	89.2	93.6	97.6	139.3
63	74.8	75.1	79.9	77.5	82.1	78.6	80.0	80.4	82.3	83.3	83.9	85.5	88.6	93.0	97.0	139.8
80	76.1	77.0	80.7	80.1	83.7	79.9	81.7	82.0	83.1	84.3	85.0	86.5	88.9	92.7	95.3	139.7
100	77.7	76.9	80.2	79.3	83.5	80.0	81.1	81.5	82.3	83.3	83.8	85.3	87.9	91.8	91.2	134.1
125	79.9	77.8	82.2	79.3	83.8	79.4	80.0	81.9	82.6	84.4	84.2	85.6	87.1	89.6	91.7	134.1
160	82.9	79.5	83.0	79.9	83.0	79.2	80.0	84.7	89.1	87.7	86.8	89.2	90.7	94.3	95.3	137.3
200	77.8	78.4	82.6	80.5	84.7	81.1	83.7	84.5	85.8	88.1	89.7	92.2	95.1	97.4	96.5	139.6
250	82.2	83.0	87.0	85.9	88.2	86.0	86.8	87.6	89.3	91.2	92.5	94.6	96.7	97.6	96.2	141.9
315	85.0	86.0	89.4	87.1	90.3	88.4	88.3	89.5	90.4	92.8	93.4	96.1	96.2	95.5	94.4	142.0
400	83.8	84.3	86.1	83.1	87.1	84.4	85.6	84.9	86.3	86.9	87.9	89.5	90.7	91.5	89.6	137.2
500	80.9	81.2	83.8	82.1	85.8	83.4	83.8	83.7	85.4	87.0	88.6	90.5	91.9	91.7	90.3	137.2
630	82.6	86.2	89.3	89.1	92.8	93.1	91.8	90.5	91.7	91.0	91.6	91.6	92.5	91.7	90.0	141.3
800	84.9	90.2	92.9	92.7	96.7	98.0	96.3	93.8	94.4	91.9	92.1	92.7	92.4	90.7	89.4	144.3
1000	84.8	87.7	89.8	98.6	99.3	100.0	99.5	98.4	99.1	92.8	93.4	92.7	91.5	90.7	88.6	146.4
1250	85.8	86.7	89.6	94.9	96.2	95.9	94.3	91.0	89.4	89.7	91.0	90.5	91.2	89.8	88.7	142.6
1600	83.3	83.7	93.2	92.6	95.0	94.9	94.0	92.5	90.5	93.5	90.6	90.8	90.4	88.9	88.7	143.8
2000	83.8	84.9	94.4	92.1	94.0	98.7	92.8	90.1	88.0	96.6	89.3	91.6	88.6	88.2	87.7	143.0
2500	81.8	85.9	90.5	90.8	94.2	91.7	89.5	90.8	90.2	89.6	91.0	92.2	88.8	88.0	87.2	141.2
3150	85.7	88.4	97.0	93.1	94.9	96.7	92.5	93.0	92.5	95.7	94.7	95.1	90.6	89.9	88.8	144.7
4000	93.7	97.3	105.0	99.0	102.8	103.7	100.1	99.3	101.0	106.6	102.4	104.7	98.1	98.0	94.4	153.2
5000	83.5	86.2	94.0	94.5	93.8	92.5	92.4	91.4	91.7	92.5	94.7	94.1	90.4	90.3	87.4	143.6
6300	84.8	88.7	93.1	93.0	93.6	93.4	90.7	91.8	92.0	94.9	96.0	96.1	90.1	88.5	87.6	144.9
8000	86.1	89.1	95.7	93.9	95.4	93.9	94.8	93.8	93.9	96.4	97.2	99.3	93.8	91.6	87.5	147.1
10000	85.0	89.7	91.8	91.3	92.0	89.8	89.3	89.8	91.2	92.1	93.8	93.8	89.1	87.3	84.7	143.9
12500	84.8	84.6	89.8	88.2	90.6	87.7	88.2	88.4	90.3	91.5	93.1	93.0	88.8	86.8	82.9	143.9
16000	83.5	82.3	87.7	86.0	89.1	85.5	86.0	86.1	88.5	90.9	92.5	92.0	88.1	85.1	82.0	144.6
20000	79.5	78.5	84.7	82.9	87.8	82.2	83.6	82.3	85.7	87.8	88.9	89.8	86.6	82.5	79.4	144.4
OVERALL MEASURED	100.9	102.8	110.2	107.1	111.1	110.0	107.9	109.5	107.0	110.3	108.9	110.3	107.9	108.6	108.4	
OVERALL CALCULATED	98.9	101.4	107.9	105.9	108.2	108.6	106.6	107.4	105.8	109.0	107.6	109.0	106.3	105.8	106.5	158.3
PND8	113.8	116.9	123.3	119.9	122.7	123.1	120.5	117.8	120.7	124.4	122.3	123.9	119.8	117.7	117.6	

Table A-XLVIII.

UNTREATED MOD III BLADES
SCALE MODEL - SCALED DATA
NOMINAL NOZZLE
200' SIDELINE
TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM, DAY)															
50	67.6	70.3	75.9	76.6	81.8	79.1	80.5	81.0	81.7	82.3	82.1	82.5	83.6	84.4	81.1	
63	69.8	71.1	77.8	76.5	82.0	78.3	79.4	81.4	82.0	83.4	82.5	82.8	82.7	82.9	81.4	
80	72.3	72.7	78.5	77.0	81.2	78.1	79.4	84.2	84.4	86.6	85.1	86.3	86.2	87.5	84.8	
100	67.1	71.4	78.0	77.5	82.8	80.0	83.0	83.9	85.1	86.9	87.8	89.3	90.5	90.4	85.8	
125	71.3	76.0	82.4	82.9	86.3	84.8	86.1	87.1	88.6	90.0	90.6	91.7	92.0	90.6	89.3	
160	73.9	78.8	84.7	84.0	88.4	87.2	87.6	88.8	89.6	91.6	91.4	93.0	91.4	88.3	83.3	
200	72.5	77.0	81.2	79.9	85.1	83.2	84.8	84.2	85.5	85.7	85.9	86.3	85.9	84.2	78.3	
250	69.0	73.8	78.9	78.8	83.7	82.1	82.9	83.0	84.5	85.8	86.6	87.3	87.0	84.3	78.8	
315	76.9	78.6	84.3	85.8	90.7	91.8	90.9	89.8	90.8	89.7	89.5	88.3	87.5	84.1	76.3	
400	72.9	82.5	87.8	89.3	94.5	96.7	95.4	93.0	93.4	90.6	90.0	89.4	87.3	83.0	77.5	
500	72.1	79.9	84.6	95.2	97.1	98.6	98.6	95.6	94.1	91.4	91.2	89.3	86.3	82.8	76.4	
630	73.4	78.7	84.3	91.4	94.0	94.4	93.4	90.1	88.4	88.2	88.8	87.0	85.9	81.8	76.2	
800	70.6	75.5	87.8	89.1	92.7	93.4	93.0	91.6	89.5	92.0	88.3	87.2	85.0	80.8	75.9	
1000	70.8	76.6	88.9	88.5	91.7	97.2	91.8	89.2	87.0	89.1	86.9	88.0	83.1	79.9	74.6	
1250	68.4	77.4	84.9	87.2	91.8	90.2	88.4	89.9	89.1	88.0	88.6	88.5	83.2	79.5	73.9	
1600	72.1	79.7	91.3	89.3	92.5	95.2	91.4	92.1	91.4	94.2	92.2	91.3	84.9	81.3	75.1	
2000	79.7	88.5	99.3	95.3	100.4	102.2	99.1	98.4	100.0	105.1	100.0	101.0	92.3	89.2	80.4	
2500	68.9	77.2	88.1	90.6	91.4	90.9	91.3	90.4	90.7	90.9	92.2	90.3	84.5	81.3	72.9	
3150	70.0	79.5	87.1	89.1	91.2	91.9	89.7	90.9	91.0	93.4	93.6	92.2	84.1	79.3	72.7	
4000	70.5	79.5	89.6	90.1	93.1	92.5	93.9	93.1	93.1	95.0	94.8	95.5	87.7	82.0	71.9	
5000	89.4	77.4	86.1	87.9	90.1	88.9	89.0	89.6	90.9	91.2	92.0	90.4	83.4	78.0	69.1	
6300	68.1	75.0	84.1	85.0	89.1	87.2	88.3	88.7	90.4	91.0	91.5	89.8	83.1	77.2	66.3	
8000	65.1	72.3	82.2	83.3	88.2	85.7	86.9	87.2	89.4	91.2	91.7	89.2	82.6	75.1	63.9	
10000	59.0	67.8	79.1	80.6	87.6	83.3	85.4	84.4	87.5	88.9	88.7	87.5	81.1	71.9	59.1	
OVERALL CALCULATED	85.5	92.9	102.3	102.4	105.9	107.2	105.6	104.6	105.0	107.6	105.4	105.4	100.9	98.5	93.3	
PNBB	98.4	106.4	116.1	115.0	119.2	120.0	118.3	117.8	118.7	121.7	119.1	119.2	112.8	109.3	101.8	

Table A-XLIX.

UNTREATED MOD VII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

MODEL SOUND PRESSURE LEVELS (59 DEG, F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RAD) (ANS)															
	20,	30,	40,	50,	60,	70,	80,	90,	100,	110,	120,	130,	140,	150,	PWL
FREQ.	(0.39)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	
50	71.7	69.6	72.7	69.3	69.0	67.9	70.7	69.9	69.8	70.7	71.0	71.8	72.9	76.1	120.8
63	67.9	64.7	72.8	66.7	69.1	66.8	68.8	69.8	72.7	69.8	70.9	72.9	73.2	75.2	120.9
80	66.8	64.4	74.9	65.7	70.5	67.9	68.9	68.7	69.4	69.8	69.8	71.3	71.7	73.8	120.0
100	71.1	69.6	76.0	70.4	71.8	68.8	72.8	73.1	70.7	70.1	71.1	74.6	73.2	73.9	122.2
125	67.4	63.2	74.1	66.0	71.4	67.1	70.1	67.2	67.2	67.1	68.4	69.9	68.5	71.2	119.1
160	65.8	64.7	76.1	62.8	71.1	66.0	68.1	67.8	66.9	67.1	68.8	70.6	70.3	72.9	119.6
200	69.9	69.0	79.9	67.8	70.9	68.2	73.1	73.9	72.7	72.9	73.9	75.0	75.4	77.3	123.3
250	68.1	65.9	73.8	69.7	70.8	68.8	72.1	74.0	74.9	75.8	75.9	76.6	77.2	77.1	124.2
315	70.3	69.1	77.0	72.9	74.3	73.0	73.3	76.0	74.9	76.1	78.2	76.9	77.4	76.1	125.5
400	70.8	69.9	79.0	69.4	73.1	72.1	71.1	69.8	70.0	71.1	72.1	71.9	72.3	72.2	121.8
500	69.0	68.6	73.7	67.6	71.0	68.0	69.7	67.7	68.6	69.0	73.0	72.9	72.2	72.8	120.8
630	70.4	71.0	76.1	69.8	73.4	70.1	71.3	71.1	72.0	72.5	73.2	73.0	73.6	73.2	122.7
800	69.2	69.8	73.9	69.6	73.0	69.9	72.2	71.2	70.8	74.2	72.3	72.8	72.1	72.3	122.3
1000	67.4	70.0	73.4	71.0	73.5	70.1	72.1	71.1	72.0	73.2	73.2	73.9	72.4	72.2	122.6
1250	68.2	70.0	74.9	71.6	73.3	69.9	72.9	71.2	73.1	73.3	75.0	76.7	74.1	71.3	123.6
1600	67.3	70.9	79.0	72.7	75.1	72.0	73.1	72.3	72.2	74.1	76.4	76.9	75.6	73.4	124.5
2000	70.4	74.3	78.6	79.1	79.2	79.2	75.1	73.2	75.0	76.9	78.6	79.1	78.7	76.3	127.0
2500	82.2	87.8	92.2	90.6	89.0	88.2	85.2	83.9	89.9	87.3	90.0	91.8	93.2	89.0	139.9
3150	88.5	76.4	80.4	79.0	79.4	76.2	77.5	77.9	77.3	79.6	80.4	83.4	80.8	77.7	130.0
4000	70.2	74.8	79.3	78.7	78.3	79.3	78.3	79.3	80.1	82.4	84.3	82.9	82.5	78.2	131.6
5000	73.1	86.2	86.3	86.2	85.6	83.3	83.9	82.5	89.2	83.6	87.6	90.1	87.6	84.6	137.0
6300	68.4	76.0	81.3	80.2	78.3	78.2	78.2	78.4	79.3	83.3	84.6	86.1	85.7	78.3	133.2
8000	69.3	82.0	83.4	82.9	81.5	81.2	81.9	80.2	82.1	83.3	87.2	88.1	84.7	81.6	135.7
10000	66.9	77.8	82.0	80.9	78.3	77.2	76.9	76.9	78.0	80.1	83.2	83.1	81.2	78.4	132.9
12500	62.6	74.5	78.0	76.4	74.7	72.8	73.8	72.8	74.4	76.9	79.0	80.6	77.2	73.7	130.4
16000	61.3	72.1	74.3	72.1	71.6	69.1	70.2	68.5	71.1	73.5	75.3	77.2	74.5	70.6	128.9
20000	58.8	67.4	69.8	67.1	66.6	63.8	65.7	61.8	67.3	67.5	69.6	70.6	69.0	64.7	126.1
OVERALL MEASURED	88.8	91.9	95.8	93.5	92.1	91.7	90.8	90.0	90.9	93.1	94.9	96.7	96.0	93.1	
OVERALL CALCULATED	85.7	91.9	95.4	93.8	92.9	91.6	90.9	90.3	91.8	92.9	95.5	96.9	96.3	93.0	144.8
PND8	100.4	105.8	110.1	106.1	107.4	106.2	105.0	104.2	105.6	106.9	109.3	110.7	110.9	107.6	

Table A-L.

UNTREATED MOD VII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG, F, 70 PERCENT REL, HUM, DAY)															
50	60.9	63.0	71.7	67.7	70.1	67.8	72.2	72.6	70.1	69.1	69.4	71.8	68.9	67.3		
63	57.1	56.5	69.7	63.2	69.6	66.1	69.4	66.7	66.6	66.1	66.6	67.1	64.1	64.5		
80	55.3	57.9	71.6	59.8	69.3	64.9	67.4	67.3	66.3	66.0	67.0	67.7	65.8	66.1		
100	59.2	62.1	71.4	64.8	69.1	67.0	72.5	73.3	72.0	71.8	72.1	72.1	70.8	70.4		
125	57.2	58.9	69.1	66.7	68.9	67.6	71.4	73.4	74.2	74.7	74.0	73.6	72.5	70.0		
160	59.2	61.9	72.2	69.8	72.3	71.8	72.5	75.4	74.1	74.9	76.2	73.8	72.7	68.9		
200	59.5	62.6	70.2	66.3	71.1	70.8	70.3	69.1	69.2	69.9	70.1	68.8	67.5	64.9		
250	57.5	61.2	68.8	64.4	69.0	66.7	68.9	67.0	67.8	67.7	71.0	69.6	67.3	65.4		
315	58.7	63.5	71.2	66.5	71.3	68.8	70.5	70.3	71.1	71.2	71.1	69.7	68.6	65.6		
400	57.2	62.1	68.8	66.2	70.9	68.5	71.3	70.4	69.9	72.9	70.1	69.5	67.0	64.6		
500	55.2	62.2	68.2	67.6	71.3	68.7	71.2	70.3	71.0	71.8	71.0	70.5	67.2	64.4		
630	55.7	62.1	69.6	68.1	71.0	68.5	71.9	70.3	72.1	71.8	72.7	73.3	68.8	63.3		
800	54.6	62.7	69.7	69.1	72.8	70.5	72.1	71.4	71.2	72.6	74.1	73.4	70.2	65.2		
1000	57.4	66.0	73.1	71.5	72.9	73.7	74.1	72.3	74.0	75.0	76.3	75.5	73.2	67.9		
1250	68.9	79.4	86.7	86.9	86.6	86.6	84.1	83.0	84.8	85.7	87.6	88.1	87.6	80.6		
1600	54.8	67.7	74.7	75.3	77.0	74.7	76.4	76.5	76.3	78.1	78.0	79.7	75.1	69.0		
2000	56.1	66.0	73.6	75.0	75.9	77.7	77.3	78.4	79.1	80.8	81.9	79.2	76.5	69.3		
2500	58.7	77.1	80.4	82.3	83.1	81.7	82.4	81.6	84.1	82.1	85.1	86.3	81.7	75.6		
3150	53.4	66.7	75.3	76.3	75.8	76.7	77.2	77.6	78.3	81.7	82.1	82.2	79.7	69.1		
4000	53.6	72.4	77.3	79.0	79.1	79.7	80.6	79.5	81.2	81.9	84.9	84.2	78.6	72.0		
5000	51.3	68.5	76.3	77.5	76.4	76.4	76.6	76.7	77.7	79.2	81.3	79.7	75.5	69.1		
6300	46.0	64.9	72.3	73.2	73.1	72.3	73.9	73.1	74.5	76.4	77.5	77.4	71.5	64.0		
8000	43.2	62.1	68.7	69.4	70.6	69.4	71.1	69.6	72.0	73.5	74.4	74.5	68.9	60.6		
10000	38.4	56.7	64.3	64.8	66.3	64.9	67.5	63.9	69.1	68.6	69.3	68.3	63.5	54.0		
OVERALL CALCULATED	72.6	83.1	89.7	90.1	90.5	90.1	89.9	89.4	90.7	91.5	93.1	93.2	90.6	84.3		
PND8	82.4	96.1	101.6	102.3	103.3	102.4	103.2	102.8	104.3	104.4	106.4	106.4	102.4	96.3		

Table A-LI.
 UNTREATED MOD VII BLADES
 SCALE MODEL DATA
 NOMINAL NOZZLE
 100' ARC
 72% FAN SPEED

FREQ.	MODEL SOUND PRESSURE LEVELS (29 DEG, F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																PWL
	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)		
50	75.4	72.9	71.6	72.9	72.5	73.5	73.7	74.7	75.7	76.8	78.0	75.7	79.9	83.9	87.5		127.8
63	71.6	73.1	71.8	73.9	72.6	72.7	73.1	74.9	76.9	76.9	77.2	76.9	81.1	83.8	87.7		128.0
80	69.5	69.8	71.6	71.8	71.3	71.6	73.5	74.2	75.8	76.3	76.9	77.6	79.8	81.7	85.7		126.7
100	70.5	70.0	70.7	72.7	72.5	72.8	73.0	73.7	74.8	75.8	75.8	77.1	79.0	80.7	81.9		125.6
125	69.0	69.3	72.0	72.3	74.1	72.8	71.3	73.8	74.4	74.9	76.2	77.4	78.6	78.3	81.9		125.3
160	67.5	67.8	69.7	68.7	70.8	69.6	71.0	72.5	73.1	74.8	76.2	78.2	80.0	81.7	84.7		126.0
200	67.8	68.8	70.7	73.0	73.5	72.8	75.0	77.6	78.9	79.9	81.3	83.0	84.0	86.0	86.6		130.1
250	73.5	74.1	76.8	78.0	78.8	77.0	79.0	81.7	82.3	83.1	85.1	86.0	87.2	87.1	86.7		133.0
315	74.5	76.9	78.8	78.2	79.9	78.7	78.9	80.7	82.0	82.7	83.0	85.3	84.3	84.7	83.9		131.9
400	74.6	76.9	77.9	77.9	78.9	79.7	78.2	78.9	79.2	79.0	80.3	81.3	81.3	81.0	81.0		129.6
500	73.6	76.8	77.8	75.8	75.8	73.7	73.7	75.7	77.0	78.9	80.2	81.9	81.9	81.9	80.8		128.7
630	75.1	77.2	77.9	79.2	81.0	78.2	78.4	80.2	80.5	81.3	81.6	81.6	83.4	82.0	81.0		130.8
800	72.6	74.9	76.6	76.0	78.1	76.8	77.0	77.8	79.1	79.9	81.2	81.1	80.4	80.8	80.0		129.2
1000	72.8	76.1	77.1	78.5	80.3	79.3	78.6	78.0	79.5	80.3	81.4	82.3	81.3	80.1	79.2		130.1
1250	75.6	78.1	81.7	83.3	83.9	83.8	79.1	81.9	82.1	82.1	83.2	84.1	82.4	79.9	80.8		132.8
1600	74.9	77.3	81.8	81.1	82.9	82.1	79.3	81.1	81.3	82.1	83.4	84.2	81.2	80.9	80.8		132.3
2000	75.9	79.3	84.0	82.2	82.0	85.1	80.3	81.0	81.3	82.4	84.4	84.6	82.7	81.1	83.3		133.4
2500	75.7	82.0	86.7	84.2	84.8	84.1	81.2	82.7	83.3	85.1	86.1	89.1	89.3	83.1	82.0		135.5
3150	85.0	92.5	98.9	97.2	99.0	95.1	93.3	95.0	95.5	97.3	96.4	100.6	95.7	92.7	92.0		147.5
4000	76.7	83.3	87.8	87.0	87.1	87.8	85.3	85.8	87.3	89.9	90.2	90.3	88.4	85.1	84.8		138.9
5000	77.3	86.6	89.0	89.5	88.4	88.1	87.5	87.0	88.3	87.1	90.5	92.4	87.4	86.4	84.3		139.8
6300	80.3	85.4	94.1	92.4	91.4	91.4	88.6	90.1	90.7	94.5	95.3	95.4	93.3	88.2	87.1		144.0
8000	75.8	86.2	88.9	87.2	86.3	87.1	87.2	86.2	86.4	88.0	90.3	91.5	87.3	85.9	83.1		140.0
10000	73.7	84.0	88.6	88.1	86.9	85.6	84.9	86.6	87.1	88.0	91.0	90.9	87.0	85.6	83.6		140.7
12500	69.2	81.6	85.2	82.6	82.4	80.3	81.6	81.3	83.6	84.4	86.7	87.9	82.7	81.4	80.3		137.9
16000	66.9	79.1	81.8	79.3	79.2	76.9	78.1	78.8	80.2	81.2	84.2	85.4	80.2	77.9	75.7		136.9
20000	63.1	73.4	75.9	74.2	74.2	71.1	72.3	71.1	74.1	76.3	78.4	79.6	75.3	71.0	70.9		133.9
OVERALL MEASURED	91.6	95.9	101.5	99.8	99.9	98.7	97.8	97.9	98.9	100.9	101.2	103.1	100.0	98.9	99.8		
OVERALL CALCULATED	90.0	96.5	101.8	100.5	101.3	99.3	97.7	98.8	99.5	101.2	102.0	104.0	100.7	98.8	98.9		151.9
PND8	105.0	111.4	116.7	115.4	116.6	114.2	112.6	113.9	114.5	116.1	118.3	119.0	115.5	113.3	112.8		

Table A-LII.

UNTREATED MOD VII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS										SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM. DAY)									
50	60.3	63.4	66.3	69.9	70.8	71.8	72.4	73.3	74.2	74.8	74.1	74.3	74.6	74.1	71.8					
63	58.7	62.6	67.6	69.4	72.3	71.8	70.7	73.3	73.8	73.8	74.4	74.5	74.2	71.6	71.6					
80	57.0	60.9	65.2	65.8	68.8	68.5	70.4	72.0	72.4	73.7	74.4	75.3	75.5	74.9	74.2					
100	57.1	61.8	66.2	70.0	71.7	71.7	74.3	77.0	78.2	78.8	79.4	80.0	79.4	79.0	75.9					
125	62.6	67.1	72.2	75.0	76.9	75.9	78.3	81.1	81.5	81.9	83.2	83.0	82.5	80.0	75.8					
160	63.4	69.7	74.1	75.1	78.0	77.5	78.2	80.0	81.2	81.5	81.1	82.2	79.6	77.6	72.8					
200	63.3	69.6	73.0	74.8	76.9	78.5	77.4	78.3	78.4	77.7	78.3	78.1	76.5	73.7	69.7					
250	62.1	69.4	72.9	72.6	73.7	72.4	72.8	75.0	76.2	77.6	78.2	78.6	77.0	74.5	69.3					
315	63.4	69.7	72.9	75.9	78.9	76.9	77.6	79.5	79.6	80.0	79.5	78.3	78.4	74.5	69.3					
400	60.6	67.3	71.5	72.7	75.9	75.5	76.1	77.0	78.2	78.5	79.0	77.8	75.3	73.1	68.1					
500	60.6	68.3	71.9	75.1	78.1	77.9	77.6	77.2	78.6	78.9	79.2	78.9	76.2	72.2	67.0					
630	63.2	70.1	76.4	79.9	81.6	82.4	78.1	81.0	81.1	80.6	80.9	80.6	77.2	71.9	68.3					
800	62.2	69.2	76.4	77.5	80.5	80.6	78.3	80.2	80.3	80.6	81.1	80.6	75.8	72.7	68.1					
1000	62.9	71.0	78.5	78.6	79.7	83.5	79.3	80.1	80.3	80.8	82.1	81.0	77.2	72.8	70.3					
1250	62.3	73.5	81.1	80.5	82.4	82.5	80.1	81.8	82.2	83.5	83.7	85.4	79.7	74.6	68.6					
1600	71.3	83.8	93.2	93.5	96.6	93.5	92.4	94.1	94.5	95.7	94.0	96.9	90.0	84.0	78.3					
2000	62.7	74.5	82.0	83.3	84.7	86.3	84.3	84.9	86.3	88.3	87.8	86.6	82.6	76.3	70.8					
2500	62.8	77.5	83.1	85.7	85.9	86.5	86.5	86.1	87.2	85.5	88.0	88.5	81.5	77.3	69.9					
3150	65.4	76.1	88.1	88.5	88.9	89.9	87.6	89.3	89.7	92.9	93.0	91.6	87.5	78.9	72.2					
4000	59.4	76.6	82.8	83.3	83.9	85.7	86.3	85.5	85.6	86.6	88.0	87.6	81.2	76.4	67.5					
5000	58.1	74.7	82.9	84.7	85.0	84.8	84.5	86.5	86.8	87.1	89.1	87.5	81.3	76.4	68.0					
6300	52.5	71.9	79.6	79.4	80.8	79.9	81.7	81.6	83.7	83.9	85.1	84.7	77.0	71.8	63.7					
8000	48.8	69.1	76.3	76.6	78.2	77.1	79.0	77.9	81.0	81.4	83.3	82.6	74.7	67.9	57.6					
10000	42.7	62.7	70.4	71.9	73.9	72.2	74.1	73.1	75.9	77.4	78.1	77.3	69.8	60.3	50.5					
OVERALL CALCULATED	76.5	87.6	96.1	96.8	98.9	97.8	96.8	98.0	98.6	99.8	99.7	100.3	95.0	90.2	85.3					
PNDB	88.4	100.6	108.8	109.6	111.8	111.0	109.8	111.0	111.6	113.5	113.9	113.3	108.6	102.3	96.3					

Table A-LIII.

UNTREATED MOD VII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL SOUND PRESSURE LEVELS (59 DEG. F, 70 PERCENT REL. HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RAD:ANS)																	PNL
FREQ:	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()
50	78.6	75.1	79.4	75.9	77.5	76.6	77.7	78.7	79.7	80.7	80.8	79.7	84.8	89.6	93.6		132.8
63	74.9	72.9	80.5	75.1	78.7	75.9	77.1	78.6	80.1	80.9	82.0	81.2	85.5	88.8	94.0		133.0
80	76.5	72.8	79.5	76.5	78.4	76.4	77.8	79.3	79.9	81.3	82.9	82.6	85.6	88.5	91.7		132.5
100	74.7	74.0	79.7	76.0	79.8	77.6	78.0	78.7	79.8	80.5	80.8	82.8	83.2	85.6	87.5		130.8
125	76.8	78.0	81.0	75.3	80.9	77.0	80.0	81.8	80.1	79.9	81.4	82.1	83.2	84.9	86.8		131.2
160	76.5	74.8	81.5	74.0	80.6	74.8	78.0	79.5	78.8	79.6	82.1	83.8	85.1	88.0	90.6		132.2
200	76.9	73.8	82.7	76.8	80.6	76.6	78.8	80.8	82.0	83.6	86.1	88.2	89.0	91.7	91.9		135.2
250	80.8	79.8	89.8	82.1	84.7	82.7	84.9	84.8	86.1	89.0	89.1	92.0	93.1	92.9	91.7		138.4
315	80.5	81.8	86.7	83.8	84.6	83.6	83.8	84.8	85.8	87.7	89.0	90.0	91.5	90.8	89.9		137.4
400	80.5	80.8	86.5	81.8	83.8	82.6	81.8	82.6	84.1	83.7	85.1	86.8	87.0	87.0	85.6		134.6
500	76.7	78.7	83.4	80.5	81.5	79.5	78.9	79.4	84.0	82.8	84.8	87.0	87.2	86.9	84.4		133.6
630	79.8	81.1	89.0	83.3	86.2	88.3	89.1	82.9	85.4	86.2	87.2	87.2	88.3	87.3	85.8		136.3
800	77.6	79.9	83.7	80.9	83.9	85.1	82.9	81.7	83.0	84.0	85.0	86.2	86.3	84.8	83.9		134.3
1000	78.1	82.4	90.1	91.2	90.3	91.3	86.1	85.8	86.4	85.9	89.3	88.5	86.5	84.9	84.1		138.7
1250	78.6	81.2	88.8	88.1	88.9	89.0	87.1	86.7	86.9	89.0	87.3	88.3	86.1	83.9	83.6		137.6
1600	81.7	82.9	90.0	90.3	87.9	88.9	87.3	87.8	88.0	84.7	88.4	88.4	86.2	89.7	85.7		138.4
2000	81.1	84.4	90.3	92.3	95.1	99.2	94.3	92.0	91.7	91.1	90.7	89.4	88.3	87.3	86.1		143.8
2500	81.9	86.2	94.0	96.2	101.0	101.0	97.3	94.0	93.0	91.8	93.1	92.3	89.1	88.8	87.7		146.7
3150	84.1	89.5	95.3	96.3	102.4	100.4	98.3	95.1	93.8	96.3	95.7	98.4	92.4	89.4	91.0		148.2
4000	83.8	90.3	96.9	97.3	101.8	102.0	99.3	95.8	93.3	98.9	98.1	100.3	95.3	93.1	94.0		149.6
5000	81.2	88.3	94.3	95.3	96.5	97.2	95.6	94.2	92.7	91.2	94.7	94.7	89.7	89.2	88.1		145.5
6300	79.2	86.5	93.1	93.4	92.2	93.3	92.4	92.5	91.7	94.5	95.8	94.5	90.4	88.5	87.3		144.5
8000	78.8	89.4	92.9	92.5	92.3	92.1	93.2	92.2	92.9	93.0	96.3	96.2	91.3	90.0	87.9		145.3
10000	75.1	85.1	90.9	90.2	89.1	88.9	89.2	88.8	90.3	91.1	94.1	94.0	88.3	87.1	85.6		143.5
12500	72.3	82.6	87.4	87.0	86.7	84.5	87.0	84.6	86.9	88.8	90.9	90.8	84.9	83.4	82.3		141.5
16000	69.2	80.2	84.2	83.2	83.0	81.3	83.2	82.0	85.2	87.2	89.5	88.7	83.5	81.1	79.9		141.2
20000	66.5	74.6	79.2	78.5	77.3	75.4	77.5	76.3	79.5	81.3	83.8	82.8	77.6	75.4	74.3		138.2
OVERALL MEASURED	95.5	97.9	104.3	104.9	107.7	108.0	105.2	102.9	102.9	104.7	105.2	106.8	103.2	102.7	103.9		
OVERALL CALCULATED	93.6	98.3	104.2	104.6	107.9	108.8	105.5	103.4	103.1	104.5	105.5	106.3	103.1	102.7	103.4		156.4
PNDB	107.1	112.1	118.4	118.4	122.0	121.9	119.7	117.5	117.1	119.1	119.5	120.8	117.1	115.9	116.2		

Table A-LIV.

UNTREATED MOD VII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA										(59 DEG. F, 70 PERCENT REL. HUM, DAY)					
50	64.6	67.4	75.3	73.2	78.1	76.6	77.4	78.3	79.2	79.5	79.1	79.3	78.9	79.0	77.4	
63	66.5	71.3	76.6	72.5	79.1	76.0	79.4	81.3	79.5	78.9	79.7	79.3	78.7	78.2	76.5	
80	66.0	68.0	77.0	71.1	78.8	73.8	77.4	79.0	78.2	78.5	80.3	80.9	80.6	81.2	80.1	
100	65.8	66.9	78.2	73.8	78.7	75.5	78.1	80.2	81.4	82.5	84.3	85.2	84.4	84.8	81.2	
125	69.9	72.8	81.2	79.1	82.8	81.5	84.1	84.2	85.4	87.9	87.2	89.0	88.4	85.8	80.8	
160	69.4	74.6	82.0	80.7	82.7	82.4	83.0	84.2	85.1	86.5	87.1	86.9	86.5	83.6	78.8	
200	69.2	73.5	81.6	78.6	81.8	81.4	81.0	81.9	83.3	82.4	83.1	83.7	82.2	79.7	74.3	
250	65.2	71.2	78.5	77.3	79.4	78.3	78.1	78.7	83.2	81.5	82.7	83.8	82.3	79.5	72.9	
315	68.1	73.5	80.0	80.1	84.1	87.0	84.2	82.1	84.5	84.9	85.1	83.9	83.3	79.8	74.1	
400	65.7	72.2	78.6	77.6	81.8	83.7	82.0	80.9	82.1	82.6	82.9	82.9	81.3	77.1	71.9	
500	65.9	74.6	85.0	87.8	88.1	89.9	85.1	85.0	85.4	84.5	87.1	85.1	81.1	77.0	71.9	
630	66.2	73.2	82.7	84.6	86.7	87.5	86.1	85.8	85.9	83.5	85.1	84.9	80.8	76.0	71.2	
800	69.0	74.8	84.6	86.7	85.6	87.4	86.3	87.0	87.0	83.2	86.1	84.8	80.8	77.6	72.9	
1000	68.1	76.1	84.8	88.7	92.8	97.7	93.2	91.1	90.6	89.6	88.3	85.7	82.8	79.0	73.1	
1250	68.5	77.7	88.4	92.6	98.6	99.4	96.2	93.1	91.9	90.2	90.7	88.6	83.5	80.3	74.4	
1600	70.4	80.9	89.6	92.6	99.9	98.9	97.3	94.1	92.5	94.8	93.3	94.6	86.7	80.7	77.3	
2000	69.8	81.5	91.2	93.5	99.4	100.5	98.2	94.9	94.3	97.4	95.8	96.5	89.5	84.3	80.0	
2500	66.7	79.3	88.4	91.4	94.0	95.6	94.6	93.3	91.6	89.6	92.2	90.8	83.8	80.1	73.6	
3150	64.3	77.3	87.1	89.5	89.8	91.8	91.4	91.6	90.7	93.0	93.4	90.7	84.4	79.2	72.3	
4000	63.1	79.9	86.8	88.6	89.9	90.6	92.4	91.5	91.7	91.6	93.9	92.4	85.2	80.4	72.3	
5000	59.5	75.8	85.3	86.8	87.2	88.0	88.9	88.7	90.0	90.3	92.2	90.6	82.6	77.8	70.0	
6300	55.7	72.9	81.7	83.8	85.1	84.0	87.1	84.9	87.1	88.3	89.3	87.6	79.2	73.8	65.7	
8000	51.1	70.2	78.6	80.5	82.1	81.6	84.1	83.1	86.1	87.4	88.6	85.9	78.0	71.1	61.8	
10000	46.1	63.9	73.7	76.2	77.1	76.5	79.3	78.4	81.3	82.4	83.6	80.5	72.3	64.7	53.9	
OVERALL CALCULATED	80.7	89.5	98.5	100.9	105.6	106.5	104.5	102.5	102.2	103.1	103.3	102.7	97.6	94.2	89.7	
PNOB	91.2	102.7	111.4	113.4	117.6	118.5	117.2	115.3	115.2	116.5	116.8	116.0	110.0	105.5	100.2	

Table A-LV.

UNTREATED MOD VII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

TAKEOFF

MODEL SOUND PRESSURE LEVELS (59 DEG, F, 70 PERCENT REL, HUM, DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PWL
FREQ.	20.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.		
	(0.35)	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	()	()
50	79.0	76.8	76.9	77.5	78.0	79.0	80.0	80.7	80.6	82.0	82.8	81.6	86.2	91.9	96.0		134.8
63	74.9	75.0	77.8	76.7	78.9	77.9	79.8	80.8	81.7	82.1	82.9	82.7	87.4	92.1	97.0		135.4
80	75.8	75.4	76.7	77.4	78.5	77.8	79.6	80.7	81.6	82.6	83.9	83.7	87.9	91.8	94.5		134.6
100	73.9	75.7	77.8	78.5	79.8	78.1	79.9	80.9	80.7	81.9	81.9	83.8	87.2	90.1	90.1		133.1
125	74.4	76.2	79.3	78.0	80.1	77.4	79.1	79.3	80.0	81.1	81.4	83.0	85.3	87.6	90.1		132.1
160	75.1	76.7	81.1	77.7	82.9	79.1	79.8	84.8	84.7	85.1	83.9	85.0	89.2	92.3	93.8		135.7
200	74.4	76.0	78.9	77.6	80.0	78.9	80.9	83.2	83.9	86.2	88.1	90.2	92.6	95.2	95.2		137.8
250	79.8	80.7	83.1	82.7	82.9	82.8	85.1	85.8	87.0	89.2	91.3	93.2	94.2	96.1	94.8		139.8
315	83.0	84.9	86.0	86.9	88.5	87.2	87.3	88.2	87.9	90.2	93.3	94.4	94.7	94.3	94.0		140.8
400	80.9	83.7	84.0	83.5	85.9	84.1	83.8	84.1	85.0	86.9	87.2	87.9	89.2	90.1	88.8		136.4
500	79.8	81.9	82.8	80.7	83.8	82.1	82.0	82.0	83.9	85.0	86.8	89.0	90.4	90.3	87.7		135.9
630	79.4	81.3	82.1	82.8	86.5	85.2	85.1	85.4	87.3	88.6	89.6	90.4	90.7	90.4	89.1		137.8
800	80.0	84.0	86.2	88.0	91.1	90.2	91.1	88.0	86.9	86.3	89.4	89.3	89.3	89.2	87.9		139.2
1000	86.1	90.4	94.4	101.9	101.3	102.4	102.9	99.2	98.2	94.3	97.3	93.2	90.5	91.4	90.1		149.3
1250	81.2	85.1	89.1	93.8	95.4	94.5	95.4	93.1	92.0	89.4	90.5	91.3	90.5	88.5	87.9		143.0
1600	86.1	89.3	95.2	97.2	99.3	100.5	97.2	96.2	91.1	90.5	91.3	92.1	90.4	91.3	88.2		146.2
2000	80.2	82.4	91.6	92.3	92.4	94.7	91.4	89.7	89.2	90.4	89.7	91.5	88.6	87.5	87.3		141.6
2500	80.0	83.8	93.3	92.8	95.4	94.4	90.1	89.3	91.2	90.1	91.4	91.9	88.5	88.2	87.9		142.4
3150	80.3	86.3	93.3	94.3	96.6	94.4	93.6	91.6	90.5	92.6	92.4	93.3	88.8	88.7	88.2		143.8
4000	89.1	93.9	103.1	105.0	103.1	105.4	101.3	101.0	101.2	105.3	103.1	103.2	99.2	99.2	98.9		153.9
5000	80.5	89.5	93.4	95.4	94.7	94.5	95.4	93.6	93.5	93.4	96.4	96.3	90.6	90.5	88.2		145.4
6300	78.4	86.2	92.5	92.2	91.6	93.6	93.2	92.2	92.2	95.3	95.5	95.2	90.4	88.4	88.3		144.6
8000	81.4	93.1	96.2	93.9	93.5	95.3	97.2	94.9	95.1	97.3	98.3	101.4	92.7	92.3	91.0		148.5
10000	76.9	86.0	91.0	90.9	90.3	90.4	93.0	91.3	90.9	92.0	94.1	94.0	88.5	87.1	86.7		144.4
12500	73.9	85.7	88.7	88.5	88.8	88.1	91.7	88.7	90.6	92.0	93.8	94.7	87.2	89.7	84.7		144.8
16000	71.5	82.2	85.5	84.2	84.5	85.3	87.4	85.3	88.3	89.5	91.4	91.6	84.8	82.6	81.1		143.7
20000	67.9	77.4	80.8	80.5	79.5	79.9	81.8	79.8	82.7	84.6	86.7	86.6	80.7	77.6	77.6		141.3
OVERALL MEASURED	96.1	100.9	107.1	108.5	107.9	109.9	107.9	106.1	105.7	107.8	107.8	108.0	105.3	106.0	106.9		
OVERALL CALCULATED	95.4	100.6	106.6	108.7	108.4	109.5	108.0	106.4	106.0	108.0	107.9	108.5	105.4	106.1	106.4		158.7
PNOB	109.7	114.6	121.7	123.2	122.6	123.9	121.9	120.7	120.6	123.3	122.6	122.9	119.8	119.9	119.5		

Table A-LVI.

UNTREATED MOD VII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 TAKEOFF

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59 DEG. F, 70 PERCENT REL. HUM, DAY)														
50	63.7	69.2	73.5	75.7	78.1	77.1	79.4	80.4	80.2	80.9	80.2	81.0	82.9	83.5	79.9
63	64.1	69.5	74.9	75.2	78.3	76.3	78.5	78.9	79.4	80.1	79.7	80.2	80.9	80.9	79.8
80	64.6	69.9	76.6	74.8	81.1	78.0	79.1	84.3	84.0	84.0	82.1	82.1	84.7	85.4	83.3
100	63.7	69.1	74.4	74.6	78.1	77.8	80.2	82.7	83.2	85.1	86.3	87.3	88.0	88.2	84.5
125	69.0	73.6	78.4	79.7	81.0	81.7	84.4	85.2	86.3	88.1	89.4	90.1	89.5	89.0	83.9
160	71.9	77.7	81.3	83.8	86.5	86.0	86.6	87.6	87.2	89.0	91.3	91.3	89.9	87.2	82.9
200	69.6	76.4	79.2	80.3	83.9	82.9	83.0	83.4	84.2	85.7	85.2	84.7	84.4	82.8	77.5
250	68.2	74.4	77.9	77.5	81.7	80.8	81.2	81.3	83.1	84.5	84.8	85.8	85.4	82.8	76.2
315	67.7	73.7	77.1	79.6	84.4	83.9	84.3	84.7	86.4	87.2	87.5	87.2	85.7	82.9	77.4
400	68.0	76.4	81.1	84.7	89.0	88.8	90.2	87.3	86.0	84.9	87.3	85.9	84.2	81.5	76.0
500	74.0	82.5	89.2	98.5	99.1	101.0	101.5	98.4	97.2	92.9	95.1	89.8	85.3	83.5	77.9
630	68.8	77.1	83.8	90.3	93.2	93.0	94.4	92.2	91.0	87.9	88.3	87.8	85.3	80.5	75.5
800	73.4	81.1	89.8	93.6	97.0	99.0	96.2	95.3	90.1	89.0	89.0	88.6	85.0	83.2	75.5
1000	67.2	74.0	86.1	88.7	90.0	93.2	90.3	88.8	88.2	88.9	87.3	87.9	83.1	79.1	74.3
1250	66.6	75.3	87.7	89.1	93.0	92.9	89.0	88.4	90.1	88.6	89.0	88.3	83.0	79.7	74.6
1600	66.6	77.7	87.6	90.6	94.2	92.8	92.5	90.7	89.4	91.1	90.0	89.6	83.1	80.0	74.5
2000	75.1	85.1	97.3	101.3	100.7	103.9	100.3	100.2	100.2	103.8	100.7	99.5	93.5	90.3	84.9
2500	66.1	80.4	87.5	91.5	92.2	92.9	94.3	92.7	92.4	91.8	93.9	92.4	84.7	81.5	73.7
3150	63.5	77.0	86.5	88.3	89.1	92.1	92.2	91.4	91.1	93.8	93.1	91.3	84.4	79.1	73.4
4000	65.7	83.5	90.1	90.0	91.2	93.9	96.4	93.8	94.3	95.9	96.0	97.5	86.6	82.7	75.4
5000	61.3	76.7	85.3	87.6	88.5	89.5	92.7	91.2	90.6	91.2	92.3	90.6	82.8	77.9	71.1
6300	57.3	76.1	83.1	85.3	87.3	87.6	91.8	89.0	90.7	91.5	92.3	91.5	81.5	76.1	68.0
8000	53.4	72.2	80.0	81.5	83.6	85.5	88.3	86.4	89.2	89.7	90.5	88.8	79.2	72.6	63.0
10000	47.5	66.7	75.3	78.2	79.3	80.9	83.6	81.8	84.5	85.7	86.5	84.3	75.2	66.9	57.3
OVERALL CALCULATED	82.4	91.9	100.9	105.0	106.0	108.0	107.1	105.6	105.1	106.6	105.7	104.8	99.9	97.7	92.9
PND8	93.9	105.3	114.5	117.9	118.7	120.8	119.5	118.7	118.6	120.6	119.4	118.8	112.6	109.4	103.6

Table A-LVII.

UNTREATED MOD VIII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

APPROACH

FREQ.	MODEC SOUND PRESSURE LEVELS (59 DEG. F. 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																PWL
	30. (0.52)	40. (0.70)	50. (0.87)	60. (1.05)	70. (1.22)	80. (1.40)	90. (1.57)	100. (1.75)	110. (1.92)	120. (2.09)	130. (2.27)	140. (2.44)	150. (2.62)	160. (2.79)	170. (2.97)	180. (3.14)	
50	73.5	74.5	77.2	80.3	77.3	72.9	76.2	74.2	74.6	72.7	72.4	74.0	75.4	78.0			125.4
63	70.7	72.9	76.2	78.0	75.7	72.9	75.9	73.6	76.7	71.4	71.1	72.8	74.2	76.8			124.5
80	69.3	70.0	73.0	77.1	75.3	73.0	73.8	72.2	71.2	70.0	70.4	71.3	73.2	75.1			122.8
100	68.8	70.1	72.9	76.0	75.0	73.0	73.0	71.8	70.6	69.5	71.0	71.3	72.3	74.9			122.4
125	66.0	67.4	69.4	73.3	72.1	70.6	70.6	68.6	68.6	66.6	67.5	67.9	69.6	71.0			119.6
160	65.8	66.4	67.9	71.0	69.4	69.2	69.5	68.0	69.0	68.5	70.1	70.6	72.2	72.9			119.2
200	66.7	67.2	68.4	69.8	69.9	70.6	71.9	71.6	73.9	73.1	75.6	75.2	75.3	75.3			122.2
250	68.4	69.7	71.9	72.8	71.6	72.9	73.6	74.6	75.9	76.1	77.2	77.6	77.0	76.0			124.4
315	70.6	71.4	72.4	74.2	73.3	73.3	74.3	74.8	76.7	76.9	77.4	77.5	77.2	75.5			125.0
400	70.5	71.8	71.0	70.7	73.0	73.0	72.5	73.2	73.5	74.7	74.6	73.8	74.0	73.6			123.0
500	70.4	71.7	70.5	69.9	70.2	69.6	69.5	71.2	71.7	72.3	73.3	73.5	72.9	72.1			121.4
630	72.1	73.4	72.9	72.3	73.6	73.6	72.8	74.1	74.8	75.8	76.0	76.2	76.4	73.7			124.3
800	72.6	74.4	73.4	73.8	74.9	73.8	73.6	74.3	74.9	75.8	77.2	77.3	76.7	76.3			125.1
1000	72.6	76.4	75.3	78.0	76.7	75.2	74.5	76.2	77.7	78.4	80.5	79.3	77.2	76.3			127.2
1250	72.7	76.8	76.4	76.5	77.0	74.8	74.7	76.7	79.0	80.4	82.2	82.4	79.5	78.4			128.6
1600	74.1	77.7	78.0	77.1	78.4	76.0	75.8	76.9	79.2	81.1	82.8	81.8	78.7	76.4			129.1
2000	78.1	83.1	81.9	80.7	80.8	78.5	78.6	79.1	80.9	83.2	83.3	83.7	80.8	78.2			131.6
2500	87.2	93.4	90.6	90.0	88.1	85.6	85.3	86.9	88.4	89.8	89.5	90.0	88.4	86.0			139.5
3150	76.5	80.8	82.6	80.7	80.8	78.2	78.5	82.1	81.3	83.2	86.0	82.4	79.8	76.3			135.2
4000	81.3	83.8	84.6	84.0	83.0	81.0	81.7	82.5	83.2	83.9	85.4	85.4	79.3	78.7			134.2
5000	84.2	89.6	87.6	87.1	89.8	85.1	81.6	85.1	87.1	85.6	91.0	89.2	86.9	83.5			138.4
6300	82.2	84.5	86.2	83.9	82.4	79.8	79.7	80.7	82.9	85.1	87.8	85.9	80.2	77.7			135.1
8000	85.5	86.5	88.7	86.1	85.2	84.2	79.4	81.7	83.4	85.7	86.1	86.2	81.5	78.9			136.8
10000	83.0	83.7	86.0	84.3	82.2	78.0	77.6	79.4	81.4	82.4	85.1	83.1	79.7	75.7			135.2
12500	79.4	81.8	82.6	81.0	79.3	75.9	72.2	76.1	79.6	79.3	82.3	81.4	77.0	74.9			133.7
16000	78.9	82.0	82.0	79.6	78.1	76.3	74.9	74.4	76.7	77.0	79.7	80.8	75.1	74.3			134.5
20000	75.6	78.6	78.6	75.8	74.3	75.5	70.3	70.9	73.6	74.3	76.7	77.9	72.6	73.3			134.0
OVERALL MEASURED	94.5	97.7	97.8	96.9	95.8	93.0	93.0	93.7	95.0	95.4	96.7	96.3	94.5	92.8			
OVERALL CALCULATED	93.3	97.3	96.7	95.7	95.3	92.3	91.6	93.1	94.6	95.8	97.4	96.7	94.0	92.1			146.6
PNDP	106.7	111.3	110.1	109.3	109.2	106.0	105.7	107.1	108.5	109.8	111.1	110.4	108.2	106.1			

Table A-LVIII.

UNTREATED MOD VIII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 APPROACH

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59. DEG. F, 70 PERCENT REL. HUM, DAY)															
50	62.3	65.8	70.2	74.4	74.1	72.9	72.7	71.3	69.8	67.9	68.3	67.0	65.8	64.9		
63	59.4	63.1	66.7	71.6	71.2	70.0	70.2	68.1	67.7	65.0	64.8	63.6	63.0	60.8		
80	59.1	62.0	65.1	69.3	68.4	68.7	69.1	67.5	68.0	66.8	67.3	66.2	65.5	62.1		
100	59.9	62.7	65.6	68.1	68.9	70.0	71.4	71.1	72.9	71.4	72.7	70.8	68.5	64.7		
125	61.5	65.1	69.0	71.0	70.9	72.2	73.1	74.0	74.8	74.3	74.2	73.1	70.1	65.2		
160	63.5	66.7	69.4	72.4	72.3	72.6	73.7	74.1	75.6	75.0	74.4	72.9	70.1	64.5		
200	63.3	67.0	68.0	68.8	71.8	72.3	72.0	72.5	72.3	72.8	71.6	69.1	66.8	62.4		
250	63.1	66.9	67.4	68.0	69.0	68.9	68.9	70.5	70.5	70.4	70.2	68.7	65.6	60.7		
315	64.7	58.5	69.7	70.3	72.3	72.8	72.1	73.3	73.6	73.8	72.8	71.3	69.0	62.1		
400	65.0	69.4	70.2	71.8	73.6	73.0	72.9	73.5	73.6	73.8	73.9	72.4	69.1	64.4		
500	64.9	71.4	72.0	73.9	75.4	74.4	73.8	75.4	76.4	76.3	77.2	74.5	69.4	64.4		
630	64.8	71.6	73.1	74.3	75.7	73.9	73.9	75.8	77.7	78.3	78.8	77.2	71.6	66.1		
800	66.0	72.4	74.5	74.9	77.0	75.1	75.0	75.9	77.8	78.9	79.4	76.5	70.6	63.8		
1000	69.9	77.7	78.4	78.5	79.4	77.6	77.8	78.1	79.4	81.0	79.8	78.3	72.6	65.3		
1250	78.8	87.9	87.0	87.7	86.7	84.6	84.4	85.9	86.9	87.4	85.9	84.5	80.0	72.7		
1600	67.8	75.2	78.9	78.4	79.3	77.1	77.6	81.0	79.8	80.9	82.3	76.7	71.2	62.7		
2000	72.5	78.1	80.9	81.6	81.5	80.0	80.9	80.7	81.0	83.8	80.2	79.7	70.5	64.7		
2500	75.1	83.7	83.8	84.6	88.3	84.0	80.7	84.3	85.5	83.1	87.2	83.3	77.8	69.1		
3150	73.0	78.5	82.4	81.4	80.9	78.9	78.8	79.7	81.4	82.7	84.0	79.9	71.0	62.8		
4000	76.0	80.4	84.8	83.8	83.8	80.3	78.7	80.9	82.0	83.3	82.3	80.0	70.9	63.2		
5000	73.7	78.0	82.6	82.6	81.3	77.7	77.5	79.1	80.6	80.6	81.7	77.4	70.4	60.1		
6300	69.7	76.2	79.4	79.5	78.9	76.0	74.5	76.2	79.1	77.8	79.1	75.7	67.3	58.2		
8000	68.9	76.5	79.2	78.7	78.3	77.2	74.0	75.3	76.9	76.1	77.0	75.3	65.1	56.2		
10000	64.9	73.1	76.3	75.5	75.4	77.3	72.3	72.7	74.7	74.1	74.4	72.4	61.9	52.9		
OVERALL CALCULATED	84.4	91.6	93.0	93.3	93.8	91.4	90.6	92.1	93.1	93.5	93.7	91.1	85.4	78.6		
PND8	97.7	104.2	106.5	106.2	107.9	105.0	103.2	105.4	106.6	106.3	107.6	104.5	98.4	90.6		

Table A-LIX.
 UNTREATED MOD VIII BLADES
 SCALE MODEL DATA
 NOMINAL NOZZLE
 100' ARC
 72% FAN SPEED

NOISE	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	PWL
FREQ.	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	(2.79)	() () ()
50	72.5	74.2	75.3	74.1	74.8	73.8	76.3	75.8	77.7	78.8	79.0	80.4	83.5	86.7	127.9
63	70.8	74.8	76.1	74.7	74.4	74.4	76.4	75.9	79.0	78.2	79.1	80.5	84.2	87.5	128.4
80	68.5	71.1	73.2	72.5	73.0	73.2	75.2	74.9	76.5	78.0	79.1	79.9	82.5	84.6	126.8
100	69.9	71.4	74.3	74.3	75.7	76.8	77.7	77.0	76.1	76.3	79.0	80.9	81.6	82.6	127.1
125	70.8	75.4	74.8	79.1	79.8	82.4	83.7	81.9	77.7	77.4	82.3	85.4	82.6	81.2	130.6
160	68.5	69.8	69.2	69.8	70.0	71.8	71.9	72.5	74.8	76.3	78.5	79.6	80.6	81.1	129.0
200	69.4	71.2	73.1	72.7	73.6	75.6	76.7	77.5	79.5	80.9	82.8	83.7	85.4	85.0	129.4
250	74.3	76.7	78.0	77.6	77.6	80.8	81.2	80.8	83.5	83.6	84.8	86.2	86.5	86.0	132.2
315	78.8	78.9	78.1	79.4	79.6	79.0	80.0	81.8	82.5	83.4	84.3	85.3	86.1	85.0	131.8
400	77.6	77.6	76.0	76.8	77.4	77.3	77.6	78.9	80.2	81.5	82.2	82.1	82.0	82.4	129.5
500	75.6	76.0	76.4	75.4	76.2	75.9	76.8	78.3	79.0	80.7	81.6	81.8	82.2	80.8	128.7
630	77.1	77.7	78.0	78.6	79.0	80.0	80.4	81.2	81.7	82.6	82.5	82.7	83.4	81.0	130.8
800	75.6	76.9	76.6	77.3	78.8	78.3	78.3	79.8	80.8	81.1	82.2	81.7	81.7	80.3	129.6
1000	76.0	78.9	78.3	79.3	80.3	79.8	79.3	80.7	81.9	82.6	84.3	83.4	81.1	80.8	131.1
1250	75.1	79.5	78.9	79.4	80.7	79.8	79.6	80.9	82.5	84.1	86.4	85.7	81.5	80.9	132.0
1600	76.9	79.6	80.0	80.3	82.0	80.4	80.2	81.2	83.9	85.8	87.4	84.7	81.4	79.7	133.0
2000	78.1	82.3	82.2	81.5	83.4	82.0	81.8	82.1	85.1	87.6	86.9	85.3	81.6	80.9	134.2
2500	82.8	86.2	87.4	87.1	87.9	89.2	83.4	88.5	87.7	87.4	89.6	86.1	83.8	82.2	137.2
3150	93.5	99.2	99.6	99.3	99.0	99.7	91.6	93.9	93.9	93.6	97.5	91.3	92.7	90.4	147.0
4000	83.5	86.1	86.4	86.2	86.2	85.4	86.4	86.1	87.8	90.4	88.0	87.1	82.1	81.6	137.6
5000	83.2	86.5	86.1	84.6	87.7	89.0	83.8	87.0	90.8	89.0	92.9	86.0	85.7	84.0	138.9
6300	92.2	94.8	96.9	94.5	93.2	89.2	88.8	89.2	92.0	92.7	95.2	89.6	89.6	85.8	144.1
8000	84.8	87.9	88.2	86.2	86.7	85.1	83.3	85.9	88.0	89.3	91.8	87.6	83.1	81.6	139.2
10000	85.8	89.4	91.6	88.6	87.7	89.6	84.3	86.1	89.6	90.4	92.0	88.0	84.8	81.9	141.4
12500	83.4	86.4	88.1	86.3	85.6	82.8	81.8	83.7	87.0	86.4	87.8	85.7	81.2	80.0	139.3
16000	82.3	85.3	86.0	84.2	84.0	81.8	79.2	80.9	84.3	85.0	86.4	85.1	80.4	78.3	139.8
20000	79.9	82.7	83.0	80.8	80.6	80.1	76.3	77.9	81.0	82.1	83.2	82.2	77.9	75.4	139.4
OVERALL MEASURED	97.9	101.6	102.2	100.7	100.7	98.0	97.5	98.0	100.2	101.8	102.0	99.5	99.0	98.2	
OVERALL CALCULATED	98.8	102.4	102.9	101.9	101.7	99.0	97.2	98.6	100.5	100.9	103.1	99.8	99.0	98.0	
PWDB	112.2	116.7	117.1	116.6	116.7	114.1	111.9	113.5	114.6	114.9	117.6	115.5	113.3	111.8	152.1

Table A-IX.
 UNTREATED MOD VIII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 72% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59, DEG. F., 70 PERCENT REL. HUM., DAY)													
50	63.4	67.1	71.6	72.7	74.9	76.3	77.3	76.6	75.2	74.7	76.3	76.6	75.1	72.6
63	64.2	71.1	72.1	73.4	78.9	81.9	83.3	81.4	76.8	75.7	79.5	81.1	76.0	71.0
80	61.8	65.4	66.5	68.1	69.1	70.5	71.0	72.0	73.8	74.6	75.7	75.2	73.9	70.7
100	62.5	66.8	70.2	70.9	72.6	75.0	76.3	76.9	78.5	79.2	79.9	79.3	78.5	74.4
125	67.3	72.2	75.1	75.9	76.6	80.1	80.8	80.1	82.4	81.8	81.9	81.6	79.6	75.2
160	70.9	74.3	75.2	77.5	78.5	78.4	79.5	80.3	81.4	81.5	81.3	80.6	79.0	74.0
200	70.4	72.9	72.9	74.9	76.2	76.6	77.1	78.2	79.0	79.7	79.2	77.4	74.8	71.2
250	68.3	71.2	73.3	73.5	75.0	75.2	76.2	77.6	77.9	78.8	78.5	77.0	74.9	69.4
315	69.7	72.8	74.9	76.6	77.8	79.2	79.8	80.4	80.5	80.6	79.3	77.8	75.9	69.4
400	68.0	71.9	73.4	75.3	77.6	77.4	77.6	78.2	78.8	79.1	79.0	76.7	74.1	68.4
500	68.3	73.8	75.0	77.2	79.0	78.1	78.6	79.9	80.6	80.5	81.0	78.4	73.4	68.7
630	67.2	74.3	75.5	77.3	79.3	78.2	78.8	80.0	81.2	82.0	83.0	78.6	73.6	68.6
800	68.8	74.4	76.6	78.1	80.6	79.5	79.4	80.2	82.6	83.4	83.9	79.4	73.3	67.1
1000	70.1	76.9	78.7	79.3	82.0	81.0	81.0	81.1	83.6	85.4	83.4	79.9	73.4	68.0
1250	74.4	83.0	83.7	84.8	86.4	84.2	82.6	84.6	86.2	85.1	86.0	80.6	75.4	68.9
1600	84.9	93.5	95.8	96.9	97.5	94.6	90.7	92.8	92.4	91.2	93.8	85.6	84.0	76.7
2000	74.7	80.3	82.7	83.8	84.7	84.3	83.5	85.1	86.3	88.0	84.3	81.3	73.3	67.6
2500	74.2	80.6	82.2	82.1	86.2	84.0	82.9	85.9	89.2	86.5	89.1	82.1	76.7	69.6
3150	82.9	88.8	93.1	92.0	91.6	86.2	87.9	88.2	90.5	90.3	91.3	83.6	80.3	70.8
4000	75.2	81.8	84.3	83.8	85.3	84.3	82.6	85.0	87.4	87.0	86.9	81.5	73.5	66.0
5000	76.5	83.7	88.2	86.7	86.8	85.3	84.2	85.8	88.7	88.5	88.6	82.3	75.5	66.3
6300	73.8	80.7	84.9	84.7	85.1	82.9	82.1	83.9	86.5	84.8	84.6	80.1	71.6	63.4
8000	72.3	79.7	83.2	83.3	84.2	82.7	80.3	81.7	84.6	84.1	83.6	79.5	70.4	60.2
10000	69.2	77.2	80.7	80.6	81.6	81.9	78.4	79.7	82.0	81.8	80.9	76.6	67.2	55.0
OVERALL CALCULATED	89.1	96.4	99.2	99.6	100.3	98.1	96.5	97.7	99.1	98.7	99.4	94.2	90.4	84.6
PND	103.0	109.2	112.6	112.3	113.2	111.2	110.0	110.9	112.8	112.5	113.1	107.3	102.9	95.4

Table A-LXI.

UNTREATED MOD VIII BLADES

SCALE MODEL DATA

NOMINAL NOZZLE

100' ARC

84% FAN SPEED

MODEL SOUND PRESSURE LEVELS (90 DEG. F., 70 PERCENT REL. HUM., DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)																	PNL	
FREQ. (	40,	50,	60,	70,	80,	90,	100,	110,	120,	130,	140,	150,					
) (0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.62)	() () () () (
50	74.5	75.3	75.7	76.0	77.2	77.9	78.2	79.7	80.1	81.1	84.1	88.6					129.6	
63	72.9	75.9	75.7	75.3	76.4	77.7	78.8	80.9	80.1	81.8	84.6	89.2					130.1	
80	73.5	75.5	75.4	75.9	76.7	77.1	78.2	79.7	80.5	82.2	84.2	88.2					129.7	
100	73.6	75.8	75.8	75.9	77.1	76.8	77.8	78.6	79.3	81.2	83.5	86.4					128.8	
125	73.8	78.4	80.7	82.2	79.1	78.9	81.6	82.1	80.8	80.3	81.5	84.8					130.2	
160	72.8	73.6	73.6	74.7	75.3	75.4	77.3	79.3	80.9	82.9	84.7	87.3					129.4	
200	75.4	76.9	76.7	77.0	78.9	79.9	81.6	83.6	85.1	87.2	89.4	91.4					133.7	
250	81.2	83.2	83.4	81.2	83.9	84.2	85.6	86.7	89.0	90.0	91.4	92.6					136.7	
315	83.1	82.4	83.7	82.9	83.7	83.9	85.2	86.1	87.7	89.2	90.7	91.4					136.8	
400	80.8	80.3	80.9	81.1	81.8	81.9	82.7	84.2	85.5	86.6	87.3	87.3					133.4	
500	80.4	87.6	84.2	82.7	81.4	82.2	83.9	85.2	86.3	88.9	89.2	88.0					135.4	
630	80.8	82.4	83.9	83.9	84.3	85.2	87.2	87.7	88.4	87.6	88.6	88.6					133.9	
800	79.9	80.4	82.9	82.7	82.9	83.0	84.3	84.9	85.1	86.7	86.9	86.4					134.1	
1000	82.3	84.9	86.8	86.7	89.1	82.7	83.3	84.8	86.9	87.3	88.8	89.2					132.8	
1250	81.9	86.7	86.3	89.2	87.2	83.7	84.9	84.9	85.4	85.9	86.1	84.6					136.0	
1600	80.3	82.6	83.9	86.8	82.8	81.2	82.3	83.3	84.7	85.8	84.2	83.4					133.9	
2000	81.9	84.3	86.0	88.7	84.8	83.9	81.2	84.5	86.0	85.9	85.1	83.6					139.4	
2500	84.8	83.8	85.8	89.0	86.8	84.4	82.3	86.3	86.3	88.1	85.8	84.7					138.4	
3150	101.6	103.6	102.6	102.2	104.1	101.9	99.4	94.6	98.3	97.5	94.8	94.0					151.3	
4000	94.1	95.9	95.8	92.4	96.3	94.9	92.3	89.6	93.1	91.5	89.3	87.2					144.5	
5000	87.3	86.7	88.8	92.1	89.3	86.3	87.8	90.3	88.2	92.5	87.1	86.2					139.8	
6300	95.0	95.8	94.8	94.1	93.5	91.9	92.8	92.8	94.2	95.7	90.7	88.4					144.8	
8000	91.4	91.6	89.6	91.7	89.9	87.3	88.2	89.8	91.6	91.6	88.7	85.4					141.4	
10000	91.1	90.4	90.6	89.9	89.5	87.8	90.1	89.8	90.3	93.8	87.9	85.1					142.6	
12500	88.6	87.4	86.9	86.2	85.4	84.3	86.4	88.1	88.1	90.9	86.3	83.8					140.8	
16000	85.8	86.1	84.9	84.7	85.1	82.7	84.1	86.3	86.3	88.6	86.9	81.5					141.1	
20000	83.6	83.3	82.4	80.9	83.1	79.9	81.1	82.8	82.8	84.8	83.7	79.3					140.7	
OVERALL MEASURED	103.5	103.1	104.8	104.4	105.3	103.3	102.5	100.8	102.7	103.4	102.1	102.5						
OVERALL CALCULATED	104.2	105.8	105.8	105.8	106.8	104.8	102.9	101.7	103.4	104.2	102.4	102.3					155.8	
PNL	119.0	120.7	120.2	120.3	121.2	119.3	118.1	119.7	118.2	118.3	118.2	119.8						

Table A-LXII.
 UNTREATED MOD VIII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 84% FAN SPEED

	FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (89. DEG. F., 70 PERCENT REL. HUM., DAY)											
50	69.4	73.2	74.2	75.0	76.6	76.5	77.3	77.7	77.7	78.6	79.2	80.0
63	69.5	75.6	79.0	81.3	76.6	78.6	81.1	81.2	78.4	77.6	77.2	78.2
80	68.4	70.8	71.9	73.7	74.8	75.0	76.7	78.3	78.8	80.1	80.3	80.6
100	70.9	74.1	75.0	75.9	78.3	79.5	81.1	82.6	83.4	84.3	85.0	84.6
125	76.6	80.3	81.6	80.2	83.2	85.7	85.0	85.7	87.2	87.1	86.9	85.7
160	78.4	79.5	81.8	81.8	83.0	83.4	84.5	85.0	85.9	86.2	86.0	84.3
200	76.1	77.2	79.0	80.0	81.1	81.3	82.0	83.1	83.6	83.5	82.6	80.1
250	75.6	84.5	82.3	81.6	80.7	81.6	83.2	84.0	86.4	85.4	84.4	80.6
315	76.0	79.2	81.9	82.7	83.5	84.5	86.4	86.5	86.4	84.5	83.7	81.1
400	74.9	77.2	80.9	81.4	82.1	84.3	83.5	83.6	83.1	83.5	81.5	78.9
500	77.2	81.6	84.7	85.4	84.3	82.0	82.5	83.5	84.4	84.0	81.7	77.5
630	78.7	83.3	84.2	87.8	86.3	83.0	84.0	83.6	83.3	82.5	80.9	76.7
800	75.0	79.2	81.4	85.4	81.7	80.4	81.4	81.9	82.5	82.3	78.9	75.4
1000	77.6	80.8	83.7	87.3	83.8	83.1	82.3	83.1	83.7	82.4	79.7	75.4
1250	75.3	78.6	81.6	85.1	81.8	80.9	80.3	80.9	81.6	80.5	77.5	73.1
1600	79.0	79.9	83.3	87.3	85.6	83.3	84.1	84.6	84.0	84.3	79.7	75.9
2000	95.6	99.7	99.9	100.4	102.9	100.8	98.3	92.8	95.7	93.6	88.8	85.0
2500	88.1	91.9	93.1	93.7	95.3	93.9	91.1	87.9	90.5	87.6	83.2	78.0
3150	80.9	82.4	86.0	90.2	87.9	85.0	86.4	88.4	85.4	88.0	80.7	76.6
4000	88.3	91.4	91.5	92.1	92.0	90.6	91.0	90.7	91.3	91.3	84.0	78.2
5000	83.8	86.4	86.9	89.0	88.7	86.4	87.1	88.1	87.9	87.4	82.1	75.3
6300	84.2	86.0	87.9	88.2	88.4	86.9	89.0	88.1	87.6	89.4	81.0	74.3
8000	79.1	82.7	84.0	84.5	84.3	83.4	85.3	86.4	85.2	86.2	78.8	71.1
10000	77.7	81.2	82.1	83.2	84.3	82.1	83.3	84.8	83.5	83.7	77.9	68.2
OVERALL CALCULATED	98.0	101.8	102.4	103.4	104.8	103.0	101.7	100.0	100.9	100.2	96.7	93.9
PND8	111.6	115.4	116.3	117.3	118.5	116.8	115.7	113.6	114.5	113.8	109.1	105.0

Table A-LXIII.
 UNTREATED MOD VIII BLADES
 SCALE MODEL DATA
 NOMINAL NOZZLE
 100' ARC
 TAKEOFF

MODEL SOUND PRESSURE LEVELS (59, DEG, F, 70 PERCENT REL. HUM. DAY) - ANGLES FROM INLET IN DEGREES (AND RADIANS)															PML
FREQ.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.	150.	160.	
	(0.52)	(0.70)	(0.87)	(1.05)	(1.22)	(1.40)	(1.57)	(1.75)	(1.92)	(2.09)	(2.27)	(2.44)	(2.79)	(3.14)	
50	76.1	75.4	76.3	75.9	78.2	79.0	79.8	81.0	82.3	82.8	84.8	87.3	94.4	100.8	
63	74.1	77.0	77.1	77.6	78.0	78.9	80.1	81.4	83.2	83.4	85.4	88.2	96.5	104.2	
80	74.8	75.6	77.8	78.0	78.4	80.2	80.5	81.3	82.5	83.7	86.0	88.1	95.4	103.8	
100	75.3	75.4	78.1	78.0	78.7	79.3	80.0	80.5	81.8	82.8	84.8	87.3	92.7	102.5	
125	75.6	76.7	76.8	77.9	77.3	77.5	78.4	79.4	80.8	81.9	84.1	85.8	89.3	100.8	
160	76.8	77.9	77.5	79.0	77.0	78.3	79.3	81.8	83.5	84.5	87.9	89.9	93.0	103.9	
200	76.1	77.7	78.9	79.1	79.6	81.9	82.9	84.9	87.3	89.5	91.7	94.2	95.5	107.4	
250	81.7	83.2	84.6	85.4	84.5	85.1	86.8	88.2	89.8	91.5	94.0	95.9	95.3	109.6	
315	86.4	87.4	86.6	90.5	89.5	87.1	88.8	88.8	91.0	92.3	94.7	94.9	94.3	109.6	
400	83.7	83.4	83.0	83.5	83.9	84.2	84.5	85.8	87.2	88.4	89.7	90.6	90.5	106.3	
500	81.4	80.6	80.9	81.5	81.9	83.3	83.1	85.5	87.1	89.3	91.1	92.7	89.6	106.6	
630	84.3	83.6	83.0	85.6	85.5	89.7	89.2	90.2	90.5	92.7	91.9	92.7	90.0	109.4	
800	81.9	83.2	83.8	86.2	84.8	86.7	86.8	88.2	88.5	90.6	90.8	91.2	88.5	107.8	
1000	82.1	85.4	89.4	90.7	93.7	92.4	89.4	90.5	90.8	90.3	91.2	90.9	88.2	100.5	
1250	85.1	89.6	96.2	97.6	101.5	97.2	96.5	93.3	95.3	92.6	92.0	92.0	90.1	106.1	
1600	82.3	89.0	92.1	93.2	97.4	92.9	91.7	89.5	90.8	90.2	90.7	90.7	87.2	102.3	
2000	87.1	94.2	96.1	96.2	98.6	96.1	93.1	89.6	93.2	93.2	93.9	90.9	89.6	104.7	
2500	83.5	88.6	90.7	95.7	96.6	91.0	90.0	89.4	90.7	90.5	92.9	89.6	88.2	102.4	
3150	88.3	92.2	94.6	99.4	99.5	94.6	93.6	92.8	91.9	94.9	94.6	90.1	88.4	108.8	
4000	98.3	102.6	107.1	109.4	107.8	102.8	103.4	100.8	100.1	104.9	102.8	98.1	97.3	108.3	
5000	89.9	91.3	92.0	92.7	93.3	92.9	90.0	91.3	94.1	91.8	95.8	90.3	88.0	103.3	
6300	86.9	91.1	92.7	93.1	93.7	93.2	91.8	91.5	92.8	94.0	94.7	88.9	85.1	103.7	
8000	91.6	95.7	95.8	96.1	96.6	96.6	93.3	94.9	96.7	96.8	97.8	94.8	89.8	107.6	
10000	86.2	90.4	92.1	91.6	92.8	91.9	90.1	90.6	91.9	92.1	94.0	88.7	83.7	104.0	
12500	89.2	88.3	90.5	90.3	91.7	90.3	88.6	89.4	92.6	92.6	93.4	89.4	84.2	104.5	
16000	83.2	87.4	88.6	88.0	90.3	89.3	88.3	88.9	91.4	91.4	92.6	89.0	83.0	105.3	
20000	88.3	84.6	85.6	85.1	89.5	86.3	84.6	85.8	87.6	87.6	89.0	86.5	82.1	104.9	
OVERALL MEASURED	106.8	104.6	108.2	110.2	110.8	106.5	105.8	104.3	105.3	107.3	107.2	105.5	106.8		
OVERALL CALCULATED	101.4	105.6	109.1	111.3	110.8	107.2	106.6	105.8	106.2	108.1	108.1	106.0	106.3		108.9
PNOB	116.7	120.7	124.2	128.2	128.9	122.8	121.8	120.8	120.8	123.4	122.9	119.7	118.8		

Table A-LXIV.
 UNTREATED MOD VIII BLADES
 SCALE MODEL - SCALED DATA
 NOMINAL NOZZLE
 200' SIDELINE
 TAKEOFF

FULL SIZE SOUND PRESSURE LEVELS SCALED FROM MODEL DATA (59, DEG., F., 70 PERCENT REL. HUM., DAY)														
50	68.8	71.2	75.4	76.4	77.8	79.1	79.7	80.0	80.9	81.3	82.1	83.1	82.7	
63	69.0	72.4	74.1	76.2	76.4	77.0	78.0	78.6	79.9	80.2	81.3	81.5	79.1	
80	70.0	73.5	74.7	77.3	76.0	77.7	78.8	81.3	82.6	82.8	85.1	85.5	82.6	
100	69.3	73.3	76.0	77.4	78.6	81.3	82.5	84.3	86.3	87.8	88.8	89.7	84.9	
125	74.7	78.6	81.6	83.6	83.5	84.4	86.3	87.6	88.7	89.7	91.1	91.4	84.5	
160	79.3	82.7	83.6	88.7	88.4	86.5	88.3	88.1	89.9	90.5	91.8	90.3	83.3	
200	76.5	78.7	79.9	81.6	82.8	83.5	84.0	85.1	86.0	86.6	86.6	85.9	79.3	
250	74.1	75.7	77.8	79.5	80.7	82.6	82.5	84.7	85.9	87.4	87.9	87.9	78.2	
315	76.8	78.7	80.6	83.6	84.3	88.9	88.6	89.5	89.3	90.7	88.7	87.8	78.4	
400	74.3	78.2	80.6	84.2	83.6	85.8	86.1	87.4	87.3	88.5	87.5	86.2	76.7	
500	74.4	80.3	86.1	88.6	92.4	91.5	88.7	89.6	88.7	88.2	87.9	85.9	76.1	
630	77.2	84.5	92.9	95.4	100.2	96.3	95.8	92.4	93.9	90.4	88.6	86.8	77.7	
800	74.3	83.8	88.7	91.8	96.0	92.0	90.9	88.5	89.4	88.0	87.2	85.4	74.6	
1000	78.9	88.8	92.5	93.9	97.1	95.1	92.3	88.7	91.7	90.9	90.3	85.5	76.7	
1250	75.1	83.0	87.1	93.3	95.1	90.9	89.2	88.4	89.2	88.2	89.3	84.1	74.9	
1600	79.7	86.5	92.9	97.0	98.0	93.6	92.8	91.3	90.4	92.5	90.9	84.4	74.7	
2000	89.5	96.9	103.4	107.0	106.3	101.8	102.5	99.8	98.5	102.5	99.1	92.3	83.3	
2500	76.8	85.4	88.2	90.2	93.9	91.9	89.1	90.2	92.5	89.3	92.0	84.4	73.6	
3150	77.6	85.1	88.9	90.6	92.2	92.2	91.0	90.5	91.3	91.6	90.8	83.0	70.2	
4080	82.0	89.6	91.9	93.8	95.1	95.7	93.7	94.8	95.2	94.5	93.9	87.7	74.2	
5000	76.9	84.8	88.7	89.8	91.9	91.6	90.0	90.3	91.1	90.3	90.6	83.0	68.1	
6300	75.6	82.6	87.3	88.7	91.2	90.6	88.9	89.2	92.1	91.0	90.2	83.7	67.5	
8000	73.2	81.8	85.9	87.1	90.5	90.1	89.3	89.6	91.6	90.5	89.8	83.4	64.9	
10000	69.6	79.1	83.3	84.9	86.6	88.1	86.6	87.6	88.7	87.6	86.7	81.0	61.7	
OVERALL CALCULATED	92.7	99.9	105.4	108.7	109.4	106.3	105.9	104.4	104.9	105.9	104.6	100.7	93.1	
PND8	106.6	113.7	119.0	122.2	122.7	119.9	119.6	118.3	118.3	119.9	118.2	112.8	103.0	

IX. REFERENCES

1. Kazin, S.B., "Acoustic Testing of a Supersonic Tip Speed Fan with Acoustic Treatment and Rotor Casing Slots," NASA CR-134501, October, 1973.
2. SAE AIR 876, "Jet Noise Prediction," July, 1965.